AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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MIDSUMMER.
I hear the Wind among the Trees
Playing celestial symphonies;
I see the branches downward bent,
Like Keys of some great Instrument.
And over me unrolls on high
The splendid Scenery of the Sky,
Where through a sapphire sea the Sun
Sails like a golden Galleon.....
LONGFELLOW.
PO. MUELLER
AMER. AGRI.

Drawn (by Mueller) and Engraved for the American Agriculturist.

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See page 299 and onward for Sundry Humbugs, and other Matters of Special Interest to every one of our Readers.

July.

The Linden, in the fervors of July,
Hums with a louder concert. When the wind
Sweeps the broad forest in its summer prime,
As when some master-hand exulting sweeps
The keys of some great organ, ye give forth
The music of the woodland depths, a hymn
Of gladness and of thanks. BRYANT.

FARM AND GARDEN WORK

JULY, 1888.

Much hard work has been done by, and much more is expected of, the farm hands, and a good celebration of the "Fourth" will go far to make the men contented, and do the work of men who are satisfied with their lot. If there is a community celebration it is well to join in with that, but if none has been provided for, by all means have the day observed by the farmer's family, and especially the young people. Every young person, girls as well as boys, should early learn what the day means, and make it a duty to celebrate it in some manner, that the day held so dear to our ancestors may be held in reverent observance by their descendants. The farm should be a school of patriotism, for the farmer, if any one, has cause to be grateful for that form of government the birthday of which is celebrated on this "Fourth of July." The blessings of a republican form of government are such a matter of course that we are apt to overlook them, as we do those of the sun and rain. The farmer of all men should celebrate the "Fourth of July," if in no other way at least by reading the "Declaration of Independence." Let this be read in family council assembled, as becomes its importance, and it will be well for each one to give it a thoughtful private perusal, that its great truths may be firmly fixed upon the mind and heart. This should not be put down as a part of the "work" of the month, but let it ever be regarded as one of the pleasurable duties to celebrate the Fourth of July upon every farm in the Nation, West, East, South and North.

Prudent farmers find it well to choose their seed grain now, by selecting a portion of the field that appears the best; going through this and pulling up weak stools and destroying all tall weeds. This portion is to be kept and threshed separate from the rest.....Hoed crops suffer from neglect; the earlier a weed is out of the way the better for the crop. Weed by horse implements wherever practicable. Stop hoeing the corn after the ground is well shaded.....Pastures should not be fed too close. If there is a rainy spell, apply any good fertilizer, under which are included plaster and ashes.....Sow the ruta-baga sorts of turnips early this month, in drills wide enough to hoe with horse hoe. Sow with a drill that will also sow a fertilizer, and use two to three hundred pounds of superphosphate per acre.....Any deficiency in the hay crop may be made up by sowing fodder crops, especially fodder corn, which, sown thickly in well manured rows, will yield a great amount, to be fed green, ensiloed, or cured....Potatoes of early sorts should be dug as soon as ripe; if a rain storm follows this, they may sprout and be injured. Late potatoes set their tubers about the middle of this month, and should not be disturbed after this. A light furrow should be thrown to the hills; pull up large weeds by hand; continue to poison the later crops of potato-bugs.....A weedy field may have a crop of buckwheat, and this, before there is danger of frost, should be turned under as a green manure.

Live Stock Notes.

At this season, when we advise the farmer, his hired men, and his family, to preserve their health by avoidance of exposure to the sun in the hot part of the day, the same precaution should be extended to the domestic animals. Shade is one of the most important considerations, and if there are no shade trees in a pasture, it is well to provide a shelter. Set the needed number of crotched posts, lay light poles in the forks of these, and place a sufficient quantity of tall leafy brush to form a shady covering; if thought to be necessary to keep the brush in place, lay some poles upon it. It may be easier to use straight poles and nail on six-inch boards from one to the other, near the top, and arrange on the covering in any way that may be preferred. Animals will not be long in finding the use of the structure, and cows will soon pay its cost in the increased flow of milk. If water is not at hand at all times, let them be driven to it regularly, and preferably to a stream deep enough to wade into up to their bellies and cool off; give them time to enjoy this luxury. It is a wise provision against a dry time to sow an abundance of fodder corn. The milch cows may have their flow kept up by placing them in a shady shed or stable and feeding upon the fodder.....Mares with foals may also have the fodder if pasture is scanty..... Lambs will be weaned this month, and the ewes with full udders must be milked and the lambs given a moderate feed of bran or oats daily. Tar the noses of all sheep, to keep off the Gad-fly; examine the feet for signs of foot rot; clean out suspected feet and apply a saturated solution of "Blue vitriol" (Sulphate of Copper).....Pigs at pasture should not be neglected as to water.

Greenhouse and Window Plants.

If the greenhouse needs repairs, such as glazing, painting, or overhauling the heating apparatus, have them done early, so that there will be no hurry about it, and the houses ready whenever the plants must be taken in. Plants that are kept in through the summer must not be neglected in any respect. They are apt to suffer from lack of shade. The plants set out, both from the greenhouse and from the window, need care. Unless the pots are plunged, shelter the roots by placing boards against the pots, to protect them from the burning sun. Give all needed water, and look out for incursions of insects. The year's supply of sphagnum-moss should be secured while the swamps are dry. By hauling the moss to the high land, and leaving it there to drain and dry out for some weeks, there will be much less water to carry home. Peat, loam, sand and all other supplies should be secured and properly stored early.

Flower-Garden and Lawn.

The frequency of the mowing of the lawn should be governed by the condition of the grass. In a hot dry time the lawn will be injured by being cut too close. If the late Crab-grass (*Panicum sanguinale*) gets into the lawn, it should be mown as soon as it is tall enough to cut, and before it can produce seeds. Take advantage of a wet spell to pull up by the root docks and any other large weeds. If "bedding plants" are grown in beds upon the lawn, keep them in good order, and if one is disposed to outgrow another, cut it back.....The flower border can be easiest kept in order by the frequent use of a long-toothed rake. Pæonies and other hardy perennials, if seeds are not wanted, should have the clusters cut away as soon as out of flower, as it is useless to exhaust the plants in producing a crop of seeds that are not wanted..... Dahlias need stakes to prevent them from being injured by storms; the side branches are apt to be broken, by their own weight, if not supported. The stems of tall-growing gladiolus, of some lilies, tuberoses, etc., will need to be supported by stakes.

THE KINDS OF FISH FOR PONDS.

SETH GREEN.

Many inquiries are received from parties all over the United States, having ponds varying in extent from one-fourth of an acre to an acre, and who desire to know what kind of fish should be used for stocking them. This, from the meager description generally given, is a difficult matter to decide; but a few simple hints such as I will here give will undoubtedly aid many in deciding this question for themselves. In all parts of the United States the waters are stocked by nature with the kinds of fish best suited to their peculiarities, and if it is desired to stock the pond with any of the fish which abound in the local waters you must observe what kind of bottom the particular fish you prefer lives on; ascertain the depth and temperature of water in which it is usually found, and also what it feeds on, and where and when it casts its spawn. After you have ascertained this it will be a very simple matter to determine whether your waters are provided with the natural characteristics suitable for the welfare of the fish. There is much of the above that those who are at all familiar with the waters of their region would know, if they would only stop to consider, without actually going to look.

All anglers and lovers of the finny tribe, as a rule, have their favorite fish, and it is not strange that they should be particularly desirous of cultivating and caring for that variety of which they are the most fond; but this is impossible unless the waters of their ponds are similar to those of the natural homes of the fish, and if they are not they must content themselves with the next best. As an illustration, we will take a small inland lake similar to thousands which are scattered about the country. Perhaps it is one having a width of from one to three miles and a length of from five to seven, and perhaps in parts from seventy-five to one hundred feet deep. In this body of water we will find many different kinds of bottom, the character of which is usually indicated by the appearance of the shore. Extending along for a certain distance we will find hard rocky bottom where the water is almost always clear. Here we will find the small-mouthed black bass, the rock bass, and perhaps the pike-perch. We go on a little further and we see weeds showing their heads above the water and the bottom covered with them. Here we find the yellow perch and pickerel. We row along for say half or three-quarters of a mile further, and we come to a cove in which the waters look dark and muddy. In here we are almost sure to find the bull-head, and in toward the shore cat-tails and bull-rushes will be seen growing, close to the edges of which will many times be found the large-mouthed black bass, also known as the Oswego bass. The pickerels are also at home in such spots. Out in the deep water, where it is always pure and cold, the lake or salmon trout holds forth. I have used this illustration for the purpose of showing my readers what the natural habitat of a few varieties of fish is, and what they must have in order to thrive. In addition to this they must be supplied with an abundance of suitable food. Many will wish to stock their ponds with speckled trout. This cannot be done unless the pond is fed by a large quantity of pure spring water. The bottom is not such an important matter if the waters be pure and cold the entire year, and for the best results it should be fed by a small spring brook. There are very many ponds in which only carp will thrive, and the character of these is muddy bottom, an abundance of aquatic plants, and a supply of water only sufficient to keep up with the natural evaporation. The warmer the water the better the fish like it and the faster they grow. As a rule it will not pay to attempt to stock fresh water ponds with salt water fish. The water is not natural to them, and they will not thrive.

A Shorthorn Dairy.—The Shorthorn cows first imported to the United States and even down to the middle of the present century were abundant milkers and great butter-makers. But it has been the practice of the present generation to develop the beef-making tendency until the milking qualities of American Shorthorns have been nearly bred out and they are scarcely regarded as a dairy breed in this country. In England, however, the dairies, particularly those which supply the towns with milk, are still largely composed of Shorthorn cows. The prize cup and medals of the British Dairy Farmers' Association have been awarded to the herd at Westminster Lodge, Saint Albans. The herd consists of Shorthorns, and a careful system of tests and selection has resulted in weeding out all inferior cows. The *Live Stock Journal* of London gives a table showing in detail the yield of thirty cows and heifers for the milking year ending the 31st of March last. The twenty cows gave from 5,020 pounds to 10,010 pounds, the average yield of the twenty being 6,430 pounds. The ten heifers gave from 4,229 pounds to 5,414 pounds, the average yield of the ten being 4,863 pounds. These figures, while showing that the Shorthorns still retain their character as dairy cows in England, confirm the opinion expressed by the late Professor L. B. Arnold, after a careful inspection of English dairies, that their milk yield does not compare favorably with that of Holstein-Friesian or Channel Island cattle. The American method of breeding the superb Shorthorns for beef—unsurpassed as they are in that direction—would still seem to be better, at least for this country, than to breed and feed them for "general purposes."

CARE OF FARM HORSES.

J. M. MORGAN.

The general appearance of the farm horses throughout the country furnishes convincing proof that the great fundamental principle, that feed and work are to one another in inverse ratio, is widely ignored. Thus in severe weather, when to work abroad is most exhausting to the animal system, no change is made in the daily ration, neither are precautionary measures taken when forced illness occurs. In the term "severe weather" the extremes of heat and cold, as well as that most trying phase, drenching rains, are included. Few horse owners seem to be aware how dangerous to the lives of horses are heavy rains; a thunder shower encountered in the course of heavy work will cause chest founder, rheumatism, and lung and bronchial troubles. With these serious dangers at hand, horse owners would need to be cautious and well provided against the possible results. The winter of this year, from January 1, 1888, to May, 1888, was a period of sore trial to animal life; the weak and the strong alike went down before its unwonted fury. The powerful truck horse, well cared for in city stables, the family horse of the villager, the rag-picker's starving cripple, the sleek and pampered carriage horse, the high-priced trotter, and even the costly and scientifically cared for thoroughbred, all suffered more or less from the visitation of a severe and protracted winter. The sole cause of this widespread suffering and large attendant loss was not the dreadful weather experienced; it was in many instances due to want of proper care. The dweller in city stables is exposed to foul air, arising from overcrowding until the atmosphere is pestilential, and his vital forces are depressed by breathing overheated air, laden with disease from improper surroundings; the opposite conditions torment the farm drudge, whose sad life is hastened to its end by damp stables, noisome and chill.

The care and feed of a horse whose work is slow, should differ entirely from the care and feed of a horse required to put forth his strength in rapid action. This difference does not consist in neglect of the one nor in over-solicitude for the other. Quite the contrary, as both animals require treatment based on sound judgment. The slow-worked horse can with perfect safety be given a more bulky ration than it is possible to expect a fast-working animal to thrive upon. It must be borne in mind by horse owners that it is not the quantity nor even the quality of a horse's ration which alone keeps him in health, rather is it the quantity of proper food which is fully digested and then assimilated which sustains animal life and insures its most vigorous tone. The losses by death have been very heavy this year, even in farm stables, where the horses were not called upon to put forth unusual exertion, but where a secret danger lurked in evils incident, or unusually lengthened hours of idleness, and where no change in feed was observed.

When a horse stands idle his daily ration must immediately be reduced in quantity and varied in substance. No grain should be fed, except sparingly and in a fully cooked state. The allowance of hay should be diminished, and light mashes easy of digestion should replace the solid food held back. Absolutely no cold water can be allowed, as to swallow a sufficient quantity of cold water and take no exercise would chill the stomach, reduce the normal heat of the system, thus inducing indigestion, a frequent forerunner of colic. Water which stands at blood-heat is always safer than cold water, in that it is more readily absorbed; in hot weather it thins and cools the blood, mixing rapidly with it, and in cold weather it does not chill the stomach. A comforting drink of oat-meal gruel, or of linseed gruel, one pint of meal or of linseed to a gallon of water, will be of greater value to the fatigued or idle horse, than would be a bushel of grain. Another source of danger to the farm horse is the practice of feeding roots in their raw state. Roots, such as carrots, potatoes, etc., given in very small quantity, when chopped

fine and mixed with cut hay and bruised oats, act as mild laxatives, and with some horses give tone to the stomach; these roots mentioned should never, when fed raw, be washed, as when properly housed or pitted there will adhere to them more or less of the soil in which they grew. These earthy particles are wholesome for our domestic animals, none of which need this condiment more than those constantly fed by hand. When on pasture and grazing, quite a goodly share of earth is taken up. Now we are careful to request horse owners and grooms to distinguish between earth and dust; this latter is most hurtful. Thus dusty hay causes various affections of the lungs and respiratory organs. Grain in a dusty state also causes serious troubles, one of the most deadly forms being calculus, a disease to which millers' horses are subject.

It is noteworthy how slow to shed their winter coats are farm horses. This delay in the action of the skin is generally ascribed to the coldness of stabling, as contrasted with the warmth of city stables. True warmth is a recognized factor in early coating, but good, nourishing, easily digested, and readily assimilated food, has far more to do in the matter. Last April the larger number of farm horses looked shaggy as bears, were low in condition, having the outward symptoms of ill-health. This bad condition was the result of improper treatment, rather than of exposure to the severe weather. When from any cause whatever a horse is kept idle in the stable, it is cruelty of the gravest description to tie the animal so that he cannot have easy and frequent change of position.

RAMIE AND ITS PREPARATION.

Great interest is taken in various quarters just now in the cultivation of the Ramie (*Bœhmeria nivea*) as a fiber plant. Double the quantity of cloth can be made from ramie as from the same weight of flax or hemp, and the texture is lighter, solider and cheaper. It is already used for the adulteration of silk, and may be mixed advantageously, it is averred, with cotton, silk or wool. It has the advantage over cotton of greater strength and durability, and may be made into all grades of stuffs from sail-cloth down to fine lawns and laces. The cultivation of this plant is making great progress in Spain. It is also being grown in the valley of the Rhone, in Algeria and in India. The reports are all very encouraging, so far as the inherent qualities of ramie are concerned, and the ease and cheapness of its cultivation. There is only one trouble, but that is serious. Despite the cheery assertions of some English manufacturers that they are able to decorticate it by machinery on a profitable scale, the drawback lies just there. Ramie contains a gummy substance which no process has yet been able to remove without impairing both the beauty and durability of the fiber. Several chemical processes have been applied to it, but the fiber comes from them little better looking than vulgar oakum. Much is promised from a new process invented by M. Fremy, of the Jardin des Plantes at Paris, but no satisfactory results have yet appeared. All mechanical contrivances thus far tried have also proved ineffectual; and, even in India, the land of the cheap hand labor which prepares the fiber for the delightful grass-cloths of British looms, it seems to be felt that machinery only can bring the ramie into general use. The East Indian government has offered a premium of $25,000 for a successful machine, and no practical result has yet followed. The French government is manifesting great zeal in the matter, and on the fifteenth of August next will open an international competition at Paris of machines and processes for the decortication of the ramie. The classes are as follows: *First*—Steam machines for operating on the green fiber; *Second*—Steam machines for treating the plant dried; *Third* and *Fourth*—Machines operated by hand or other simple methods, suitable for colonial use; *Fifth*—The best and most economic process for transforming the fiber into threads for spinning. Whatever be the outcome of the competition in Paris, it seems apparent that a fortune awaits some lucky inventor, who shall succeed in overcoming the intractibility of the ramie.

Hay and Harvest.—Our climate is so warm that the dates for cutting the grass crop and the grain will vary materially and the time will be very different within localities not far separated. The maturity of grain proceeds very rapidly towards the end. Every experienced farmer has his view as to the proper condition in which his wheat should be cut. While some prefer to cut while the grain is still "in the dough," others prefer to wait until the grain is just "out of the dough." Where there is a broad area to be harvested, it is perhaps better to begin a few days too early than to have the last of the harvest a few days too late. If hay is to be sold, it is cut later than if to be consumed on the farm; the purchasers prefer it so.

THE CULTIVATION OF CABBAGES.

Market gardeners and truckers are raising fewer cabbages than formerly. Their land is too valuable. The railroads have annihilated distance, and cabbages, like potatoes, are sent hundreds and even thousands of miles to market. Cabbages are soon to become a farm crop. When the price is high enough the solid heads will be sent to market, and the leaves and soft heads will be fed out on the farm. If farmers would make a business of growing cabbages for stock, the price would be regulated by the price at which they could be profitably brought from Europe.

There ought to be no difficulty in raising all the cabbages we need, and yet enormous quantities are imported from Holland, Germany and Denmark. Many of our largest cabbage growers seem to prefer buying cabbage plants rather than to grow them. The reason for this is probably that the young plants are liable to be destroyed by drouth, maggots at the roots, the black beetle and other insects, and can be grown with any degree of certainty only on specially prepared land. One would hardly believe that there are still people who attempt to raise cabbage plants by sowing them broadcast! Our own plan of growing cabbage plants is to make the land very fine and mellow by repeated plowing. Then sow broadcast five hundred pounds of superphosphate per acre, and throw up the land in ridges twenty-one inches apart. Then drill in the seed with an English turnip drill, that rolls down the ridges, sows two rows at a time, and covers the seed with a roller behind, doing all the work at one operation, and sowing over an acre an hour. Superphosphate is specially valuable for cabbage and turnips. As soon as the plants break the crust, go through the rows with a horse-hoe, and keep the soil constantly stirred and absolutely free from weeds. When ready to pull, we run a plow that has a point and landside, but no mould-board, under the rows and lift them up. They can then be pulled or dug out with a potato hook without breaking the roots. Some cabbage growers are particular on this point, while others contend that it is better to strip off all the small roots, even taking special pains to see that this is done when setting out the plants. In shipping, the plants are placed in shallow open boxes with a little damp moss at the roots. Some of our large growers prefer to dig the plants a week or ten days before the final planting, and "heel them in" until wanted. The plants wilt, and the broken roots callous over and are then in better condition for setting out than when taken fresh from the bed.

SETTING OUT THE PLANTS.—For late fall or winter cabbage, where land is cheap, the plants are set in rows three feet apart each way. This requires 4,840 plants for an acre. The land is marked out with a common marker both ways, the plants are dropped where the two rows cross, and a careful man sets them out. They are set deep enough so that the lower leaves stand level with the surface. The great point is to press the soil firmly around the roots and not merely around the upper part of the stem. A good man ought to set out two acres a day. But, of course, much depends on the condition of the land. On thoroughly prepared, mellow, moist soil it is easier to set out two acres than half an acre on dry, lumpy, hard land. Our own plan, after marking out the land both ways, is to drop about two tablespoonfuls of fertilizer or a good handful of pulverized hen dung where the two rows cross, and then run a narrow horse-hoe up and down each row both ways. This not only mixes the fertilizer with the soil, but makes the land loose and mellow, so that it is easy work to set out the plants. See to it yourself that this is properly and thoroughly done, as much depends upon it.

BEST VARIETIES.—The favorite varieties and the time of planting vary considerably in different sections. Premium Flat Dutch, Fottler's, and Short-stem Drumhead are more largely planted in this section than all other varieties combined. The usual time of planting these varieties for late fall and winter use ranges from the 20th of June until the 10th of July. Much, however, depends on the land and season. When the soil and preparation are all that could be desired, these varieties can be frequently planted safely until the 20th of July, and occasionally until the first of August.

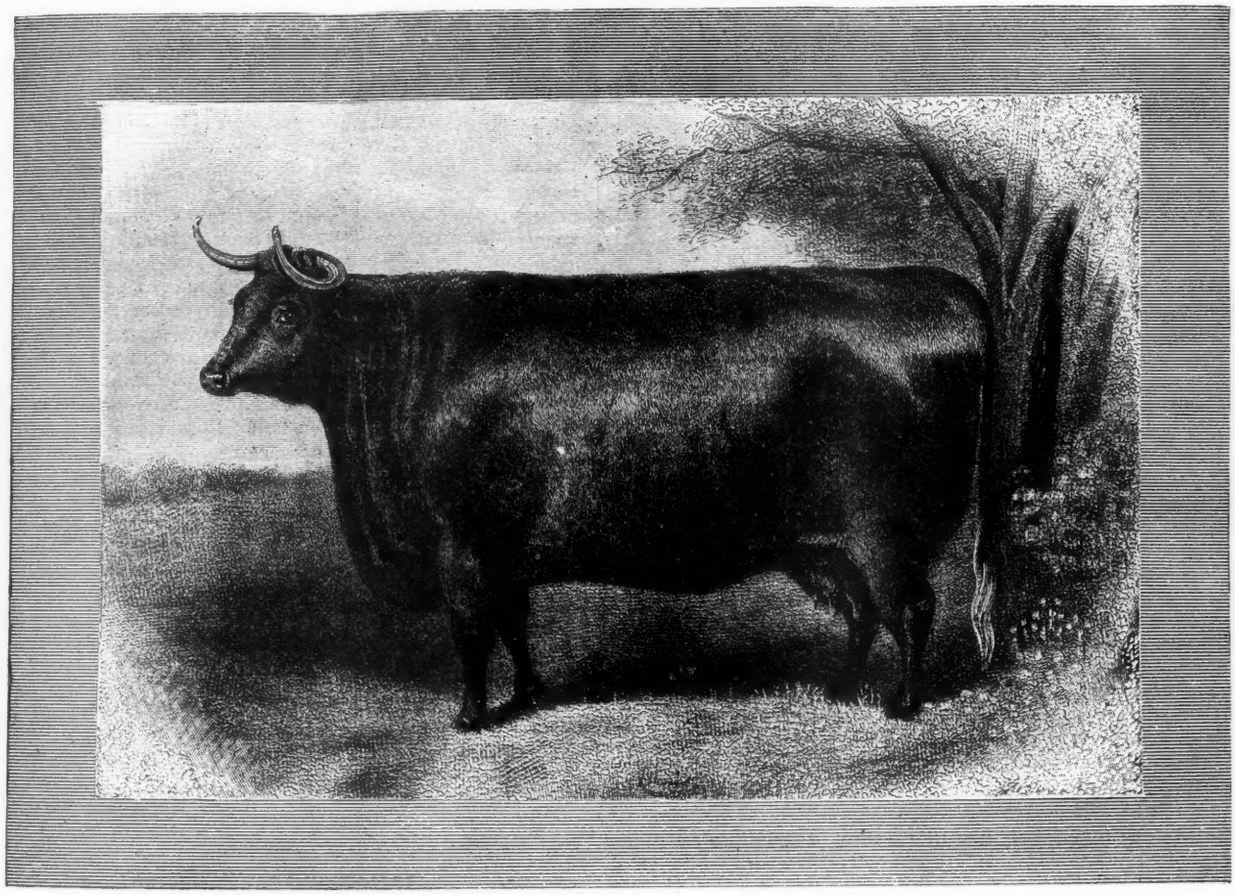
The after management of the crop consists merely in keeping the land clean and mellow by constant use of the cultivator and hoe. Simple as this is, it is where many cabbage growers fail. In two or three days after the cabbage plants are set out it is well to run a cultivator between the rows, and follow with a hoe and break the crust round the wilted plants and draw a little fine fresh soil round them. If any of the plants are dead, set out others in their place. In two or three days cultivate again, and keep on cultivating until the cabbage leaves cover the ground. It is one great secret of success.

JOSEPH HARRIS.

THE SUSSEX BREED OF CATTLE.

At the Chicago Fat Stock Show, in November, 1885, an unexpected competitor appeared, of a breed hitherto almost wholly unknown in this country. It was a yearling Sussex steer, and the honors won by it in competition with representatives of the well-known beef breeds naturally created a sensation among breeders and feeders. The Sussex breed, although so recently introduced here, is one of the oldest in England. Youatt and Martin say that when the Romans invaded Britain, nearly two thousand years ago, many of the native red cattle were driven by their owners into the dense forests of the "Wealden" which forms a part of the present county of Sussex. There these cattle have been bred ever since, with little change save such improvements as come from care and skill in management. They are described as follows by the above cited authorities: "The barrel is round and deep, the back straight —no rising spinal processes are to be seen, but rather a central depression; and the line of the back, if broken, is only done so by a lump of fat rising between the hips. The belly and flank are capacious; there is room before for the heart and lungs to prepare and circulate the blood, and there is room behind in the capacious belly for the full development of all the organs of digestion, yet the heart is well ribbed home; the space between the last rib and the hip bone is often very small, and there is no hanging heaviness of the belly or flank. The loins of the Sussex ox are wide; the hip bone does not rise high, nor is it ragged externally, but it is large and well spread out, and the space between the hips is well filled up. The tail, which is fine and thin, is set on lower than in the Devon, yet the rump is nearly as straight, for the deficiency is supplied by a mass of flesh and fat swelling above. The hind quarters are cleanly made, and if the thighs appear to be straight without, there is plenty of fullness within. The Sussex ox holds an intermediate place between the Devon and the Hereford, with all the activity of the first and the strength of the second, the propensity to fatten and the beautiful fine-grained flesh of both. Experience has shown that it possesses as many of the good qualities of both as can be combined in one frame." The defects of the Sussex are large shoulders, giving undue weight to the fore-quarters in comparison with the more valuable parts, and heavier bone and horns than are considered desirable by modern breeders. They thrive and fatten on poor pastures, where some of the more delicate breeds could barely find subsistence.

They were brought to this country a few years ago by Mr. Overton Lea, of Lealand, Tennessee, and Messrs. Burleigh and Bodwell, of Maine. A yearling steer exhibited by the former, at Chicago, in 1885, won the class prize, and when brought to the final test of the block, the committee was equally divided on the question of awarding it the first prize and sweepstakes as best dressed carcass, but the umpire's decision was adverse. At the Kansas City Fat Stock Show, in 1886, a Sussex steer two years old was awarded both the class and sweepstake prizes. Such triumphs as these naturally bring this hitherto unknown breed into prominent notice. It is mainly a beef breed. The milk, though rich in butter fats, is limited in quantity. This arises largely from the fact that in the counties where they are bred dairying has never been largely followed. Yet there are milking strains in the breed, as is evident from the fact that one of the great dairy companies in the vicinity of London has recently added one hundred pure-bred Sussex cows to its herd.



THE TYPICAL SUSSEX COW.

It is said of the Sussex that "they die well." Despite their solid bones and conspicuous horns, they yield a large percentage of edible meat when brought to the final test of the block. They are hardy, prepotent and thrifty. Of the prize cattle at the Smithfield show of 1878, the average daily growth from birth averaged as follows: Devons 1.35 pounds; Herefords 1.60 pounds; Shorthorns 1.85 pounds; Sussex 1.73 pounds; general average 1.63 pounds. The averages above were of four specimens of each breed, of ages from one hundred and sixteen to two hundred and twenty-one weeks. Similar analyses of weights of cattle shown at Smithfield in 1884, 1885 and 1886, are fully as favorable to Sussex cattle, two years old and over, while the yearlings showed less average daily growth than those of the three competing breeds. We learn from Mr. Lea that in his own herd the gains of some steers for the twelve months ending May 3, 1888, were as follows: One year and under two years, 522 pounds each; two and under three years, 337 to 532 pounds; grades from Sussex bulls and ordinarily good native cows, 458 to 626 pounds.

PORTABLE PANEL FENCES.

There are many self-evident advantages in a fence which can be quickly and easily moved. Besides the convenience of changing the location of the fence from time to time, in accordance with varying exigences, an occasional removal affords opportunity for the uprooting of weeds, briars and other foul growths which are apt to accumulate along lines of fences, especially those of the old "Virginia worm" style. Figure 1 shows a pattern of fencing which is made wholly of fence boards six inches wide, an inch thick, and sixteen feet long. The uprights are four feet long, each entire board making four of them. It is a great saving of labor to cut these by a circular saw run by power. In the lack of such a convenience they may be cut by a long cross-cut saw, with a man at each end. A pile of twelve to fifteen boards is laid up, the top one marked, and the saw run down through all of them. These cuts will furnish uprights for eight to ten panels. For putting these together the appliance shown in figure 2 is used. It consists of three benches or "horses" securely connected at the proper distance apart by a strong frame. The top face of each bench is covered by a plate of boiler iron, and vertical pieces of inch boards

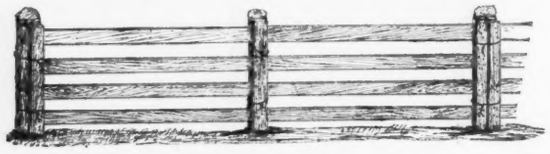


Fig. 1.—BOARD FENCE.

are firmly screwed upon one side to act as gauges to regulate the distance between the boards. The first step toward the construction of a panel is to lay the three short pieces of boards on their respective iron-covered benches. Then the fence boards are laid in place, the intervals being regulated by the upright pieces fastened to the benches. Three more uprights are then laid in place, and the whole fastened by tenpenny steel fence nails. This work may be done under cover during winter, and at other times when outdoor work is impracticable. The panels are set in position and wired to posts driven into the ground with a heavy maul.

Figure 3 shows a form of panel which includes the posts also. For additional lightness and security two wires, one barbed and one plain, are substituted for one of the boards. Figure 4 shows a modified form of the latter. It has both wires barbed, and instead of a short upright in the middle it has two diagonal braces, which give increased strength and stiffness. A still further modification, which would combine the advantages of figure 1 and figure 4, would be to have a post at one end of each panel, as in the latter, and at the other end two short pieces of board like the former. It is evidently a waste of timber and labor to have two posts come together at the end of the two panels, while one end of each can be wired to the post of the adjoining panel.

DO PLANTS GET NITROGEN FROM THE ATMOSPHERE?

JOSEPH HARRIS.

For forty years this question has been discussed. Several eminent chemists claim that leguminous plants, such as clover, peas, and beans, after they have attained a certain growth, can get all the nitrogen they want from the atmosphere, and the German

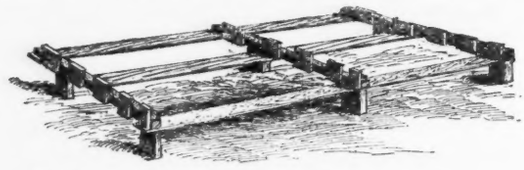


Fig. 2.—FRAME FOR MAKING PANELS OF BOARD FENCE.

writers call these "nitrogen collectors," while wheat, barley, oats, rye, Indian corn, sugar cane, beets, carrots, turnips, potatoes, and, in fact, all our crops except the pea family or leguminous plants, get their nitrogen from the soil and are called "nitrogen consumers."

There is nothing new in all this, though the tone and manner in which some recent German authors lay down the law, indicate that they think they have make a great discovery of vast practical importance. The distinction between these two great families of plants has been insisted on in the United States for thirty-eight years, and is well understood by our farmers. We all know that clover is a "nitrogen collector," and wheat a "nitrogen consumer." So far we are agreed. The only difference is that we think the clover collects the nitrogen from weak solutions in the soil, and especially from the sub-soil, while a certain class of writers

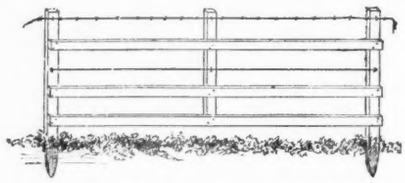


Fig. 3.—FENCE OF BOARDS AND WIRES.

at home and abroad assert that it collects the nitrogen from the atmosphere. There is no positive proof of this. Practically, and so far as the present generation of farmers is concerned, it makes no difference whether the clover, peas, beans, and other "nitrogen collectors" collect the nitrogen from the atmosphere or from the soil and sub-soil. We grow all the clover we can, or if we do not, it is not because we do not know the fertilizing effect of clover, or because our agricultural papers and other authorities have not given us line upon line on the subject.

If any of our readers think they would sow more clover if they thought it collected nitrogen from the atmosphere, we can say to them that Prof. Viele of France, Prof. Paul Wagner of Darmstadt, Germany, Prof. Atwater of Connecticut, and many other equally eminent authorities have demonstrated to their entire satisfaction that not only clover but all other leguminous plants do collect nitrogen from the atmosphere. Please recollect also that clover seed is unusually cheap and nitrogen very dear, and therefore it is a good time to sow clover and other "nitrogen collectors."

On the other hand, if any of our readers think that because clover gets nitrogen from the atmosphere, their true course is to raise all the wheat, barley, oats, and hay they can get out of the

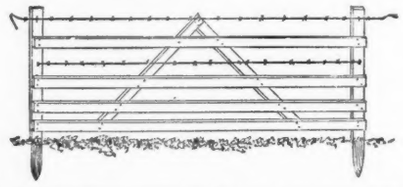


Fig. 4.—MODIFIED FORM OF BOARD AND WIRE FENCE.

land, and hurry them off to market, straw, hay, and everything that will bring cash, thinking that by and by they will have no difficulty in restoring the lost nitrogen to the soil, we ask them to remember that even eminent chemists sometimes make mistakes. It is an easy and not a costly matter to restore the mineral elements to the soil, but nitrogen always has been, and probably always will be, a costly article. Better not waste too much of it.

A SERVICEABLE SEED-DROPPER.

The great difficulty in sowing turnip and other fine seeds is to drop them evenly, and not too many in a place. For this purpose Mr. Finley McGregor, Huron County, Michigan, uses the device shown in our illustration, which was engraved from a sketch furnished by him. It is made by fitting a strip of perforated zinc over the top of a moderately wide-mouthed bottle, bending down the ends of the strip and wiring them to the neck. The whole is then attached by wires to a stick about three feet long—a split lath will do—to which a leather loop has been affixed. In using the device the hand is thrust through the loop and grasps the stick. The sower carrying it thus, with the bottle inverted and the loop resting across the wrist, walks along the row, shaking out the seed, as he would season his food from a pepper-box. If a farmer happens to have in the house one of the little tin boxes with perforated lids, such as ground spices are sold in, it will serve the same purpose as the bottle above mentioned.

SEED-DROPPER.

A SUBURBAN COTTAGE COSTING $3,500.

The cottage shown in the accompanying illustrations was designed by D. W. King, architect, for a village or suburban situation. The extreme width is thirty-six feet, and the length exclusive of veranda forty-nine feet. The general appearance, as shown by the perspective view, figure 1, is sightly and elegant. There is no extraneous ornamentation, the beauty consisting of chaste and symmetrical proportions. The broad projecting cornices and ample veranda afford welcome shade, while the alternation of clapboards and belt-lines break up all approach to monotony of external effect. The cellar extends under the entire house, is seven feet high in the clear, with cemented floor, and stone walls laid in cement mortar and pointed inside. The cellar is divided by brick partitions into three apartments and a connecting passageway. The central room is devoted to the furnace and fuel, and the others to general storage purposes. A flight of stairs in the rear apartment leads to the kitchen above, and an outside entrance is guarded by double doors.

Fig. 1.—PERSPECTIVE VIEW OF SUBURBAN COTTAGE.

The general arrangement of the first story is shown in the plan, figure 2. The entrance and stair hall communicates directly with the parlor, library and dining-room. The stairs are furnished with a newel and hand rail, and beneath them is a convenient closet for coats, umbrellas, etc. All three of the principal rooms on this floor have open fire-places, and communicate by means of sliding doors. The kitchen is separated by the pantry—an arrangement which excludes the heat and odors from the rest of the house. It is provided with closets, range, boiler, sink and other conveniences. A stairway leads to the chambers and another directly under it to the cellar. A broad veranda stretches entirely across one side. The parlor, library and dining-room are finished in hard wood, oiled

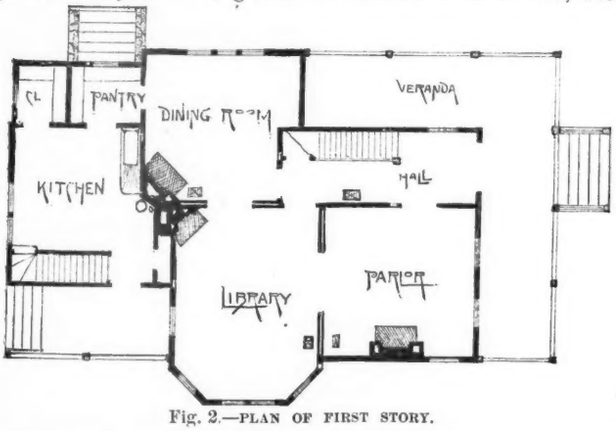


Fig. 2.—PLAN OF FIRST STORY.

upon the grain, and three coats of plastering. There are registers at the points indicated in the plan. The kitchen is wainscoted to the hight of three feet with yellow pine and beaded heading, and plastered with one rough and a finishing coat.

The second story, figure 3, is ten feet high in the clear, finished with yellow pine oiled on the grain or painted, as may be desired. The chambers are warmed by registers communicating with the furnace, and furnished with ample closets. There is also a large linen closet in the main hall, and a flight of stairs leads to the garret. The bath-room is directly over the kitchen, is well enclosed from outside exposure, and warmed by a register over the bath-tub. Adjoining this is a servants' bedroom, well lighted, cheerful, and provided with a closet. The garret is floored but left unfinished. The outside of the house is clapboarded except the gables and belt-lines of cypress shingles; the roofs are covered with pine shingles.

Horseradish.—Every family garden should have its supply of horseradish. Too commonly the plant is set in an out of the way place, and left there year after year, to be dug from as wanted. Thus treated it becomes an unsightly nuisance, and a weed difficult of extermination. The proper way to grow horseradish is to plant it every spring, and to allow it to remain in the soil but a single season. Instead of setting in poor soil it should have a rich one. The market gardeners plant it to succeed their early cabbages, and to occupy the land when that crop is off. In preparing horseradish for market, the small side roots that are cut away are saved to be used as "sets" for planting. These sets are cut about six inches long, and to make sure that they shall be planted right side up they are cut square across at the top, while the bottom end is cut slanting. These sets when prepared in the fall are made into bundles of fifty or one hundred, and preserved through the winter in trenches, the same as other roots. They are usually on sale at the seed-stores in spring. When planted as a crop to follow cabbage a set is planted between every two cabbages in the row. A hole is made with a light crow-bar, the set dropped in, and the hole filled with earth, leaving the top of the set several inches below the surface. If the horseradish comes up before the cabbages are off, its tops, in hoeing, are treated the same as weeds, until the removal of the cabbages gives them full possession of the soil. In the family

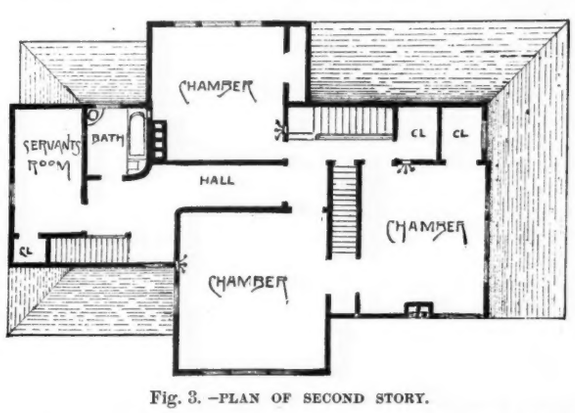


Fig. 3.—PLAN OF SECOND STORY.

garden horseradish is usually planted by itself in rows, the plants being twelve by eighteen inches apart. The crop should be hoed until the broad foliage keeps down the weeds. In the fall the roots are dug, trimmed, and stored in trenches for the winter, saving the small roots for sets. If all the crop is not dug in the fall, make it a point to take it up next spring. In growing horseradish, whether in the field or garden, it should be a rule to never leave the roots in the ground over a single season; dig them, even if they are to be thrown away, otherwise they will soon become troublesome weeds.

EXPERIMENTS IN COOKING FOOD FOR SWINE.

DR. A. G. CHASE, KANSAS.

Two lots of fine half-breed Berkshire pigs of the same litter were used. Old corn was fed in three different ways: to wit, the whole corn; ground and made into slop with cold water; and ground, boiled and fed cold. The whole corn, five bushels, made forty-seven and three-quarter pounds of pork; ground (five bushels, less miller's toll) and wet with cold water made fifty-eight and one-half pounds; the cooked meal, same amount as above, made eighty-three and one-half pounds. The utmost care was taken that this test should be fairly made. The hogs that consumed the dry corn, whole, got the kitchen slop in addition.

Another experiment was with new corn. Ten bushels of ears were fed whole, and made twenty-nine pounds of pork. The same amount ground and cooked made sixty-four pounds. Again, three bushels of meal were cooked with five bushels of potatoes and made seventy-two pounds of pork, while ten bushels of ears, whole, made seventy-one pounds. As we in the West measure corn, this would be six and two-third bushels.

Hence, we see for cooking ten bushels of corn, in the first experiment, they received, at current prices of pork, one dollar and seventy-five cents. Good pay, certainly, if it took one-half day of the hired man; in fact, it is only about one hour's work. The pay for cooking is precisely the same in the second experiment as in the first. In the third, we find that, by cooking them, five bushels of potatoes were equal to seven bushels of corn fed raw; as the millers give a bushel of meal, fifty pounds, for a bushel of shelled corn, fifty-six pounds, or nearly so. This fact was elaborated by Mr. Joseph Harris in his work "On the Pig," published some years ago, and I shall not attempt to discuss it farther than to merely assert that it is an undoubted fact, when the potatoes are fed in conjunction with a portion of meal, as above stated. In another experiment, seven bushels of raw corn made sixty-three pounds of pork, and five bushels of meal cooked made seventy-seven pounds.

A well-informed Pennsylvania farmer, who by repeated experiments carefully conducted has proved the fact, says: "With me the cooking adds just one-third to the fattening quality of the corn. In feeding 100 head, with corn at fifty cents per bushel, I make $250." Each one can estimate for himself the expense of cooking 1,000 bushels. One of the Clays, of Bourbon Co., Ky., some years ago made several elaborate experiments to test this question, and he says: "One bushel of dry corn made five pounds ten ounces of live pork; one bushel of corn boiled on the ear made fourteen pounds seven ounces; while fifty-six pounds of meal cooked, made, in one instance, sixteen pounds seven ounces, and in another nearly eighteen pounds, of live pork. Estimating hogs at four cents, the dry corn made twenty-two and one-half cents; the whole corn cooked, fifty-seven cents, and the meal cooked, sixty-five cents." Nearly three times as much as the raw corn. Will that pay? It would seem so.

There is a point connected with this, however, that I have never seen mentioned. Hogs that have been raised upon raw corn will not readily eat either cooked corn or meal. The past fall, while fattening a cow, I boiled the corn for her on the ear, and concluding to try it on fattening hogs, I endeavored for a week to get them to eat it; but a mere taste was all they would take. I starved them for two days, but they preferred to subsist on the droppings from the cattle, and got very hungry. The corn was sound and cooked in clear water. I have had the same result once or twice before. Hence I conclude that those who intend to practice cooking should commence with the pig, and use meal instead of whole grain. In an experiment which Prof. E. M. Shelton, of our Kansas Agricultural College, made in 1885, upon some pigs, to test the virtue of cooking, the experiment was made by cooking the whole grain. It was during a period of very cold weather, as he speaks of the cooked grain freezing before it was eaten, and some days' portions having to be removed from the troughs. Besides this disadvantage, the whole grain, when it is perfectly cooked—the most of the starchy matter being in the outer part of the kernel—will stick to the teeth, and is distasteful to the hog. If he eats it at all, much of the grain is swallowed whole.

But summing this question up, I think the facts will eventually be about this: The price of corn will compel feeders to seek cheaper methods of fattening than to feed entirely upon this grain, and large crops of sugar beets, potatoes, etc., will be raised and used to fatten our pork. To use these advantageously they must be cooked, and then corn meal or corn and cob meal will be added. The large steam boxes will be a necessary adjunct to every farm, when a ton of beets can be steamed daily. When beets are used, as much fat-forming food will be raised on one acre as is raised on ten acres of corn, perhaps twenty acres. Practically, we find that the chemical analysis does not show the food value of all substances. Twenty years ago Mr. Harris, speaking of an experiment he had made, said: "The result shows that in feeding, the bushel of potatoes was of more value than the bushel of corn." One of the experiments we have quoted shows the same; *i.e.*, when fed with the corn or meal. In an experiment Prof. Shelton made with corn meal, and corn and cob meal, he found that a bushel of corn and cob meal ground together was of more food value than a bushel of clear corn meal, whether fed to hogs or cattle. Chemically, of course, there is scarcely any food value to the cob, but practically it effects a more perfect digestion of the corn meal. Potatoes or sugar beets also produce fattening effects in excess of their apparent food value, and hence I think in process of time this fact will be utilized.

MANAGEMENT OF FRAME HIVES.

A. H. DUFF, OHIO.

The first and most important step in beekeeping is to choose some good movable comb hive. To insure success some knowledge must be had of the manner of manipulating such a hive. No frame hive is made that is capable of taking care of itself. Inexperienced persons will purchase a frame hive that is highly recommended and put their bees in it, thinking that the work is all done and nothing remains but to await success. But success will never come without proper management. Doubtless some of the so-called movable frame hives on the market to-day are worthless, but we are happy to state that they are becoming increasingly scarce. The improved Quinby hive, as described in *Quinby's New Beekeeping*, is an excellent one, the new Quinby swinging frame, which is eleven and a quarter by sixteen and a half inches, being our choice of all frames. To secure perfect combs, foundation combs are necessary, using full sheets. We thus not only get perfectly straight combs, but those made up of worker or drone cells, as may be preferred. In this way we can manage the supply of drones. The saving of labor, time and honey makes foundation a very desirable article in the apiary. Straight combs can be secured without foundation, but it requires close attention and careful adjusting of the inside furniture of the bee-hive. The frames should be placed one and a half inches from center to center. All wood frames should be seven-eighths of an inch wide; that is, they are cut from a board planed down to that thickness. They will give a space between each frame sufficient to let the points of the fingers down between them, so they can readily be drawn out. It is necessary in making frames to cut the stuff accurately, so when they are put together they will hang straight and plumb. The hive or body should also be cut and put together correctly. It is of great importance in locating the hive ready for the swarm to occupy to place it exactly level, so that the frame will hang perfectly straight. Bees always build their combs exactly vertical, and if the frames are not plumb the comb will not strike them at the bottom. If foundation is not used in the frames they should be supplied with comb guides. These are thin strips of wood tacked in the center of the under side of the top bar of frame. After the frames are all spaced, a cloth should be spread over them before any lid or top covering is put on the hive. Bees are not so likely to build comb to cloth as to wood. These spaces of cloth also serve as a guide. The frames should be examined daily, and if any combs are found crooked during the process of construction they should be straightened and put into place, until all is completed. When once completed in good shape, such combs are ready for handling twenty years or more, if properly cared for. When combs are built crosswise in a frame hive all we can do with them is to transfer them as from bee-hives. The comb must all be cut out and placed straight in the frames before we can receive any advantage from a movable frame system.

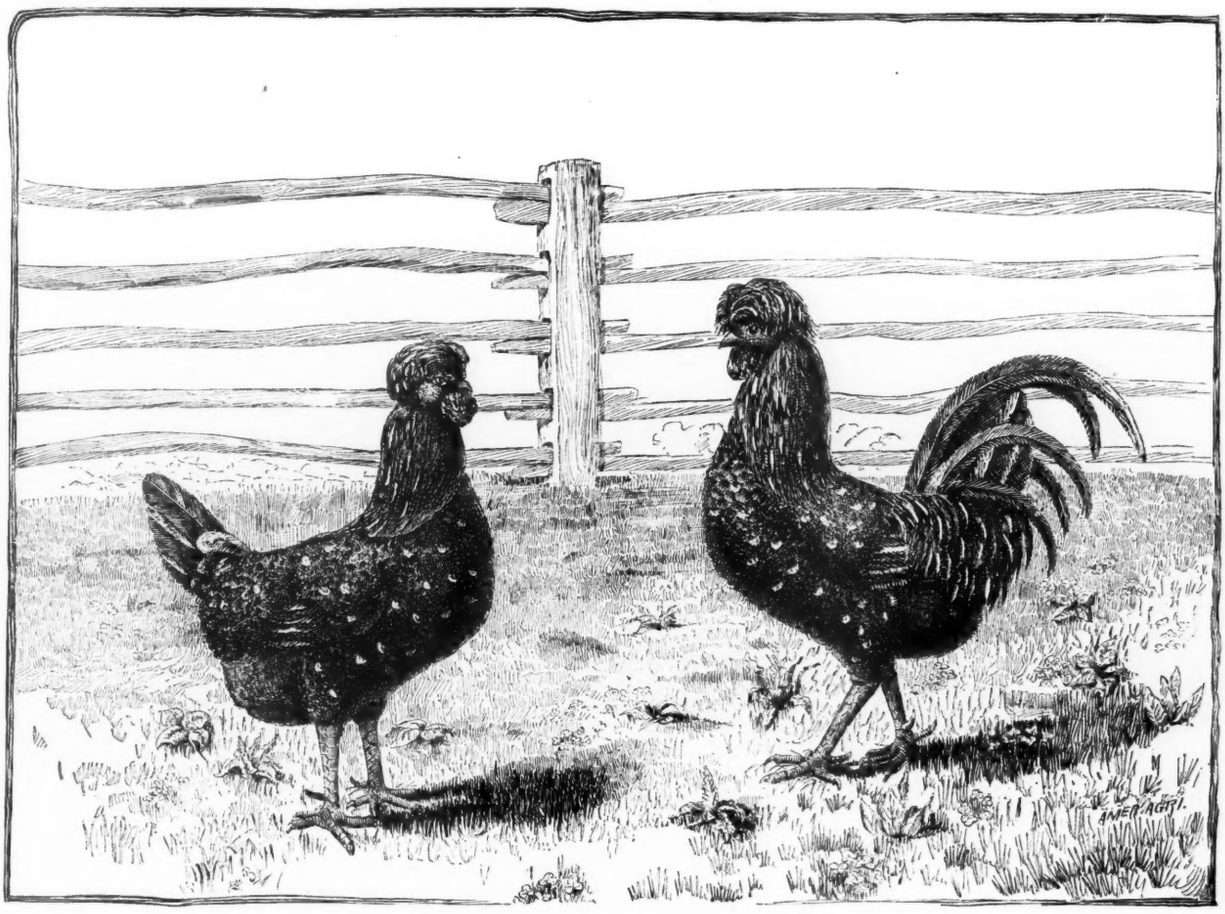
Paper in Germany.—The paper manufacture of Germany, and its exportation, are shown by recent statistics to be very large. Wood-pulp is largely used in the manufacture. If rags were depended upon, the present product of paper would not be possible. It is estimated that the product of about seventeen acres in forest is required to furnish the amount of wood-pulp annually consumed.

THE MENTAL AND MORAL QUALITIES OF HOUDANS.

MISS E. K. WINANS, NEW JERSEY.

Besides their quick growth, their good appearance in market, and the abundance of their eggs, Houdans have qualities worth considering. Alert, bright-eyed, and as persistently cheerful as blue-birds, they win regard wherever they go. It is not likely that the French fowls have been bred with a view to making them tractable, but the result of their having been for many generations tended and petted by French people, is that they have gentle and attractive ways. For the greatest success with poultry is gained by the farmers in France, and what they have done in breeding is well done. Houdans are not rebellious. A fence does not always mean to them something that must be flown over or broken through, as it does to most hens. And in corn-planting time it is of importance that they can be trained to keep away from the garden and the forbidden fields, if a little time is given to their education. When once in a while they yield to temptation, and go where they well know that they ought not to, they are so much on the look-out for angry human beings that they do not give themselves up to mischief as much as do the more stubborn and stolid breeds. The majority of the larger kinds of chickens certainly have strong and obstinate wills, and desire to do what they see their "pastors and masters" wish them not to do. To let the average hen perceive that she is not wanted near the fresh onion sets, is to make her resolve on scratching up every one; but Houdans are not average hens, and yield readily to human authority, for which they have a great liking.

Observing people have noticed the resemblance between highly bred animals and the people of the countries from which they come. One way in which the French breeds are pleasantly like the French folk, is in an eagerness for amusement or light work. Their vices spring from this tendency, and the energy which makes the hens pull out the feathers from the crests of the unresisting cocks ought to be turned to digging bone-meal and grain from under four inches of earth, and then they will be good and gay. Really fine Houdans have grandly polite manners. The cocks will not eat until their own especial hens have had all they want. Their sprightliness and pluck tell in raising the young chickens. They never droop or mope, but if they must die, die cheerfully, and thus save much wear and tear of one's feelings. If a half-grown Houdan is lost in the corn or long grass, it will look keenly about until it finds its homeward way, not stand, like a cadet of one of the more phlegmatic families, dolefully wailing for some human being to hear and take pity. It would be a good plan to try and raise the standard of intelligence of cocks and hens, which among all the highly-bred animals are only equaled by sheep in being stupid. If every farmer would breed not only from the largest hens and the best layers, but from those that have the finest dispositions and yield readily to discipline, perhaps we would have in time chickens as easy to train as dogs and horses.



A PAIR OF HOUDAN FOWLS.

Drawn and Engraved for the American Agriculturist.

THE OLDEST AMERICAN FARMERS.

RALPH S. TARR.

An interesting discovery has recently been made by Mr. Frank Cushing in the Salt River Valley in Arizona. Mr. Cushing has for years been studying the habits of the Zuni tribe of Indians, and has so far gained their confidence that their chiefs have told him many of their traditions. Acting upon clues thus obtained, he recently took charge of an expedition having for its object the discovery of certain buried cities in Arizona. Several have been discovered and partly explored, but the severe illness of Mr. Cushing which nearly cost him his life has interfered with the work.

The site of the buried cities is one of those typical, dry western mesas where cactus, mesquit, and a scanty growth of gramma grass form the only vegetation. The country is practically rainless, and forms the border of the great American desert. Salt River Valley contains a very small river which is used for purposes of irrigation by a population of mixed Mexicans, Indians, and white men. At various points in the valley the traveler might have noticed slight mounds and ridges, and hundreds have passed them by without a second thought. It is under these that the exploring party has been searching. Various names have been applied to these partially explored cities. One is called El Pueblo de los Muertos, the City of

the Dead; another El Pueblo de los Hornos, the City of Ovens; a third is named El Cuidad de los Pueblitos, the City of Little Towns; and El Pueblo de los Perdos, the City of the Lost Ones. These are only a part of the chain of cities that once covered the desert. The entire valley was studded with towns and adjacent farms.

These ancient farmers tilled the soil as laboriously as do their successors in the Salt River Valley. In times which no doubt date far back into prehistoric ages, before the time of the pyramids, these people were able to till the desert lands. There is no reason to suppose that either the climate or character of soil have changed since the time of these agricultural aborigines. Just as is now the case, an extensive system of irrigation was required to bring the desert soil under cultivation. The prehistoric farmers understood the art of irrigation, and by the aid of canals they were able to reach all parts of the plain. In some places the canals were very large, and with the rude and primitive implements of the savages there must have been a tremendous expenditure of time and energy to construct the system and keep it in working order. It is really wonderful that they should have been able to do all this, for they worked entirely with stone implements. Their hoes were simple small flat stones but slightly fashioned and fastened to a handle. They scratched the ground with these, planted with them, hoed their grain with them, and probably did their harvesting with them. In this they were but slightly behind the modern Mexican agriculturist in his native home. With him the hoe is the universal implement to be used in all cases and for everything.

Besides the stone implements, bits of pottery, and skeletons which have been found, one of the most interesting discoveries is that the ancient style of architecture is very nearly the same as that used in the same region to-day by the Mexican. When the Spaniards invaded that country they found a race of people living in fortified towns. The buildings were clustered together, and the center dwellings could only be reached by climbing a ladder, walking along the roofs of several houses, and then descending through a scuttle into the apartment. This style of architecture may still be seen in some of the ruined pueblos in the Zuni region. Its object was undoubtedly protection, for into these the old men, women and children could take refuge during a raid from a warlike neighboring tribe. The buildings are made of sun-dried brick and the roof is simply a layer of beams and bushes covered with mud. These structures, with massive walls, often two feet thick, are very cool in summer and warm in winter. In our eastern climate they would be impracticable, for the sun-dried brick melts in water almost as easily as salt. In that dry country rain comes only in the summer months, and after each rainy season very little patching is necessary to make the building ready for the next rainy season. In this way by very little care buildings have been kept in a fine state of preservation for two hundred and fifty years or more. The early Toltec farmers seem to have been the inventors of the adobe house and the method of making it. This method is very simple and consists in mixing mud with straw and molding large bricks a foot by two feet in size and allowing them to dry in the sun. When thoroughly dried they are piled roughly in the wall and cemented together by mud. All the adobe houses are low singled-storied buildings and usually consisting of one room only. It is interesting to find that in these ancient ruins almost exactly the same architecture was used as is in vogue to-day.

It is rather early to make a definite statement of the history of this ancient race, but in a general way this can be given. They were, in the first place, undoubtedly of Asiatic origin, not Mongolian as were some of the later arrivals on this continent. When they came and how, is a matter of great uncertainty, but that period must certainly be reckoned in thousands of years. They came from a peaceful stock, undoubtedly agriculturists and apparently somewhat advanced in civilization. To be sure they had no fine implements and their methods must have been very rough, yet they had religion, observed certain fixed family laws, and in a general way their communal life was advanced certainly far ahead of many existing races of savages. At one time this race covered much of Central America, Mexico, and the desert southwestern corner of the United States, and perhaps even the mound builders of the Ohio were an offshoot of the same Toltec race. We often find a distinction made between the Toltecs and the Aztecs. There is really no distinction, for they are connected races, the Aztecs being the historical descendants of the so-called Toltecs.

How long this race held peaceable control of their country cannot be estimated. They spread their domains, and we find very ancient relics of them in Utah. Then apparently came some irresistible foe before whom they were gradually swept southward. This struggle and retreat must have covered long periods of time, and the ancestors of the modern red man were very likely the aggressors. Being a nomadic race, used to the chase and naturally savage, they came to be a foe of no mean importance to the peace-loving Toltecs. The farming tribes did not give ground readily, and we find every evidence of a severe struggle. At first the houses were simple adobes, later they became more like fortifications. All along the retreat and the frontier of battle-line the Toltecs built their cliff dwellings and fortified towns, to which they fled in time of excessive danger. Finally the style of town with the houses inside, to be entered through the roofs, became evolved and were in common use at the time of the Spanish conquest under Cortez. The Aztec of the sixteenth century was simply a descendant of the races whose relics have recently been found.

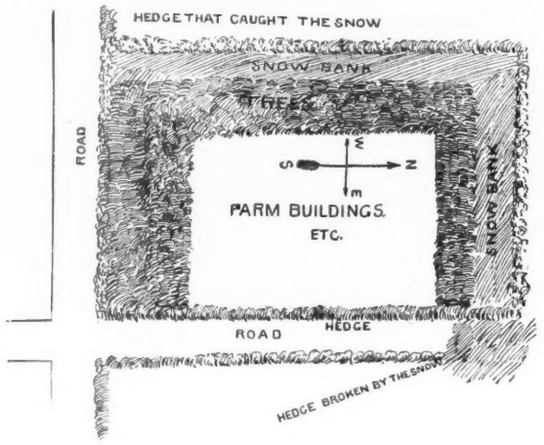
In regard to these ruins there are numerous indications that they are the result of some sudden catastrophe, very likely of a powerful earthquake shock. The position of certain bodies with broken bones point toward some such an end. The catastrophe was apparently widespread and attended by an immense loss of life; but the race was by no means exterminated, as has been stated by some, for it still exists in a modified form in certain parts of Mexico and New Mexico. When the shock came the towns were thrown to the ground, many people were killed, others were driven away and left to the mercy of enemies, animal and human, and few escaped to tell the tale. By this one fell stroke a populous region, one of the seats of a remarkable prehistoric civilization, was completely depopulated and fertile and blooming fields reduced to a desert waste; for it was long years before any attempt was made to introduce the art of irrigation again into the valley.

Ailanthus and Rose-bugs.—H. B. Luckenbach, Northampton Co., Pa., writes us that roses and the flowers of the grape were formerly disastrously destroyed by the rose-bug, but since the introduction of the ailanthus the bugs have entirely disappeared. Mr. L. also adds that he was informed by a friend now deceased, but whose veracity no one would doubt, that he had seen in his native village in the same county, where there were several ailanthus trees in the public square, that the ground under the trees was covered with dead rose-bugs. The rose-bug is generally regarded as the most difficult to deal with of all the insects of cultivation, and it would be most welcome news if the ailanthus could be relied upon to rid us of it. Here are two witnesses that insect-killing properties have in all probability been exercised by this tree. Observations are wanted to ascertain if this property is due to the unpleasant exhalation given off by the tree when in bloom, or if the offensive odor of the leaves when bruised may serve as an insecticide. The statement is of great importance, and while we do not doubt that the rose-bugs were destroyed, we trust that all who are so situated that they can make observations and experiments as to whether the insects were killed by the trees, and what the conditions under which they may be made to repeat their useful work, will do so and report.

To Irrigate a Desert.—The government proposes to reclaim a portion of the unproductive lands west of the one hundredth meridian, by a system of dams and artificial lakes, from which large portions of this area can be irrigated. Not only will lands be reclaimed, but the storage of this water will probably do something to prevent the floods, which pour down the affluents of the great rivers that thread our Western plains. Congress has been appealed to, and something may be done before long. The area included is of one million three hundred thousand square miles, and it is proposed by Major Powell to procure from Congress two hundred and fifty thousand dollars with which to begin the preliminary work of selecting the sites for dams, reservoirs and canals, ascertaining the amount of water susceptible of storage and the loss by evaporation, and estimating the value of lands to be reclaimed and of the crops which they would produce. Of the whole area of one million three hundred thousand square miles, it is thought that at least one-eighth could be made absolutely productive and immensely valuable. The rain fall in this large region varies from five inches in the driest plains to thirty inches on the mountains, and even to seventy-five or one hundred; and it is thought that the average rain fall of the region to be reclaimed is from fifteen to twenty inches a year. The cañons which it is proposed to dam are deep and narrow clefts in the rock, and can be easily used as artificial reservoirs. There is a good deal of hopefulness about this scheme, but it will take several years to bring it into actual realization and cost much money.

PROTECTION OF FARM BUILDINGS AND ANIMALS IN A BLIZZARD.

Mrs. M. J. Ward, Maple Hill Farm, Turner Co., Dak., contributed a very interesting article to the *Dakota Farmer* in reference to the protection afforded by a plantation of trees against the terrific blizzard which raged in that Territory on the 12th of January last. Seven years ago Mr. Ward planted twelve acres of maple, box elder, black walnut and cotton wood, the first being the prevailing kind. These trees were in rows eight feet apart, two feet apart in the rows,



FARM BUILDINGS PROTECTED BY ROWS OF TREES.

and in these years were twice thinned, and now stand eight by eight feet. They are arranged in the form of the capital letter E, leaving an inside space sufficiently large for two acres of orchard, five acres of meadow and garden, and buildings consisting of house, barn, granary, machine and wagon sheds, corn crib and poultry house. These buildings are situated far enough apart for convenience and comfort, with room for any desired additional ones. This parallelogram of trees is belted, except in front of the house, with a willow hedge sixteen feet from the trees, making a snow break that has rendered the banking of the snow around the buildings an utter impossibility. Not a half hour has been spent during the winter in shoveling snow. Seventeen horses and nineteen head of cattle have been easily taken care of, and the flock of one hundred Plymouth Rock fowls has been fed and watered every day, and have regularly contributed to the egg supply. In the very hight of the blizzard Mrs. Ward visited her poultry house with no thought of danger, and little realizing how near to her, people were bewildered and lost in the storm. After the storm a bank of snow on the outer edge of the trees at the west and from fifteen to seventeen feet high, extending a half mile in length, remained a silent but satisfactory witness of the advantages of these protecting trees. Mrs. Ward has written to the AMERICAN AGRICULTURIST a more minute and detailed account of the situation upon her farm, and we give the letter, as follows:

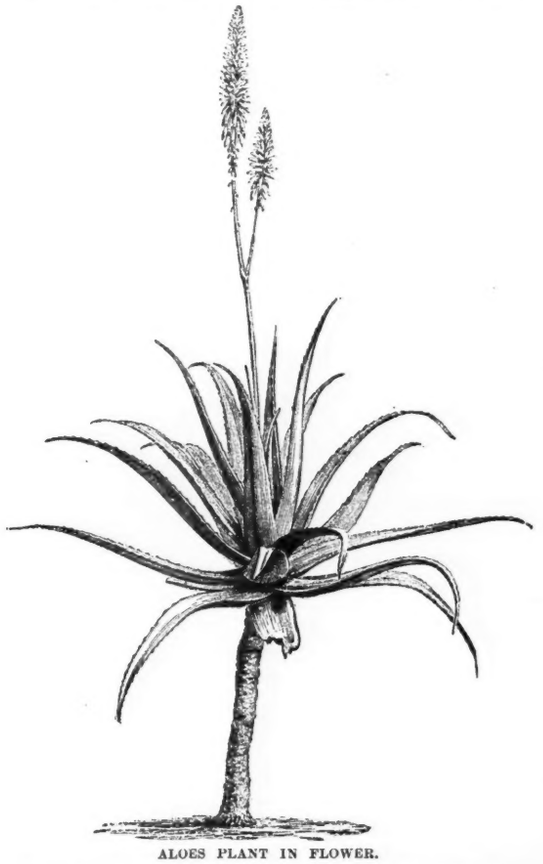
"The open side of the E is to the east. I think the south would be preferable, but when putting out the trees Mr. Ward was governed by what he then thought would be the main traveled road. Our house, built five years after, stands in the southeast corner of the E, facing the south, and has trees entirely around it, but no willow hedge in front of it. The hedge extends the entire length of the east side of the E, except for an opening to the street. The sides of the E are each about eighty rods in length, the ends each about forty rods. The twelve acres are included within the limits of the E. The willow hedge is outside the belt of the trees. The hedge was grown from cuttings set one foot apart and consists of but one row of trees. Two or three rows, the rows eight feet apart, would be better, affording a firmer check to the advancing snow. By all means the two and a half acres should be set in some form suitable for protection. Probably for cultivation, no form would be better than the one here considered. The trees are set eight by two feet. This we regard as better than setting them four by four, as, in their cultivation, it gives a chance for the use of the crossing plow, and as they require careful cultivation for three years 'the best way of setting' is worth consideration.

"The main part of our farm lies to the north and west of the E of trees. On the entire east side of the farm is a fine row of willow hedge, and the fact comes to our notice that the tree claim joining ours on the east entirely escaped injury, while the row of hedge skirting the west side of the adjoining claim, after it passes our E of trees, and is protected only by our east hedge, is almost ruined. Our hedge drifted the snow, filling the road with a drift from eight to ten feet in hight, which was so lodged against the opposite hedge that when it melted it broke it down. The road is four rods in width. We also find since the snow has melted that the high drift above mentioned—and which, instead of lying at the west edge of the trees, commenced forming at the outer edge of the willow hedge, and extended from sixty to one hundred feet into the grove—has ruined many of our trees by breaking the limbs from the bodies of the trees, as high as the snow reached. From these facts we conclude that the protecting line of hedge should be at least five or six rods from the outer edge of the trees, to afford room for the drifting snow. We find here in the West that experience often puts to flight theory, and that nothing would modify our climate more than the successful cultivation of trees. The accompanying diagram may help the reader to a better understanding of the situation."

THE CULTURE OF ALOES IN FLORIDA.

P. W. REASONER.

Among the many plants which might profitably be cultivated in South Florida on a small scale is *Aloe vulgaris*, the plant which furnishes the greater part of the "Bitter Aloes," or "Cape Aloes," of commerce. It is believed to have been first introduced fifty years ago by Dr. Perrine, who planted it in his famous garden of tropical plants on Indian Key and Lower Metacombe. Last summer we found it growing in great clusters on Indian Key, comparatively naturalized, having stood the test of fire, war, and the many agents destructive of plant life. It is occasionally seen in cultivation on the keys and mainland of South Florida, where, when known, it is highly valued for its healing properties in a fresh state. It is one of the largest-growing species of an extensive genus. The flowers are yellow, showy, and produced in a spike resembling that of the *Tritoma* (Flame Flower), as seen in our illustration. The leaves are large—a foot or more in length—and very thick and



ALOES PLANT IN FLOWER.

fleshy; peeled or split open they are used as a poultice for wounds, sores and all kinds of bruises with the most excellent results. The plant can be easily cultivated in South Florida as far up as the Lake Region. Above the Caloosahatchie in exposed situations it might be protected by light and easily constructed sheds of palmetto leaves or pine-tops, but it will stand several degrees below freezing point unharmed, and is not often injured. We can see no reason why its more general cultivation should not prove remunerative.

A PIG HOSPITAL.

Every farm that is devoted to hog-breeding to any considerable extent should have a pen especially constructed and set apart for a hospital. It should be built with a view to warmth, light and air. The lack of such a place has caused the death of hundreds of promising litters of pigs, unfortunately born when the thermometer was at zero or below; it has been the means of spreading contagious or infectious diseases upon many a farm, and its lack will never be fully appreciated until one has enjoyed its benefits. With little more expense it could be made to accommo-

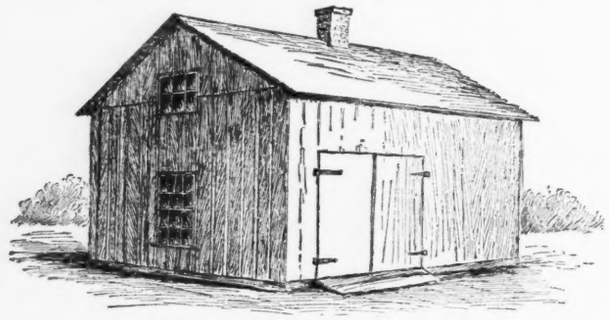


Fig. 1.—PERSPECTIVE VIEW OF PIG HOSPITAL.

date larger animals. A broken leg, severe cuts, or any one of a dozen accidents that occur with more or less regularity upon every farm, might make it desirable. For a pig hospital alone it should be a frame building; for a small place, ten by twelve feet, and for larger places, ten by sixteen feet. A small stove securely fastened upon the inside, or a furnace with pipes leading in from the outside, to warm the room in cold weather, will be found convenient. It may be the means of saving a litter of pigs, or a calf or colt, born in an unfavorable season.

The danger upon most farms, if such a structure as we have outlined should be erected, would be in filling it up with odds and ends. Being dry, and not just then occupied, the buggy harness would be apt to find a lodgment, or a few sacks of seed wheat, or the barrel of salt, the new plow, etc., until when actually needed there would not be room to turn around in it. But such a place to be of service should be kept for that purpose alone, and used when occasion requires, unless specially arranged for other uses.

Figure 1 gives a perspective view and figure 2 the plan of a combined hospital for sick animals and a wagon house, with a bench for such mechanical work as can conveniently be performed on the farm. The dimensions of the building are sixteen by twenty feet, with twelve-foot posts. It is built in very plain style, with light frame covered by vertical boards and battened, and shingle roof. The large doors, each four feet wide, may be hung on strap hinges, or slide on an over-head track. The lower story, figure 2, has a wagon floor twelve feet wide, at one end of which is a work-bench, provided with necessary tools. A pen eight feet square has a feed-trough and opens into a sleeping pen which extends under the stairs. A stove stands at the place indicated. The upper floor is used for storing feed, tools and other articles. The principal advantages of combining the hospital pen with wagon house and repair shop, are that the stove serves a double purpose, and in case of an animal requiring watchful attention, time could be saved by continuing mechanical work while watching. A small cupboard should be provided in one corner for the storage of a few medicines, a bandage or two, some stout cords, a bottle of liniment, box of salt, and such other articles as will suggest themselves to every breeder. A bottle of carbolic acid solution and a box of sulphur should always be at hand, and whoever has charge of the herd should be instructed in the use of both, and see that both are used, at least once a week from fall to spring, and as occasion seems to demand from spring to fall, in the beds where the animals sleep. A stout pulley securely fastened overhead will often be of service. Upon one side is a box-like structure large enough only for a hog to stand upright, with one side swung on hinges, so that

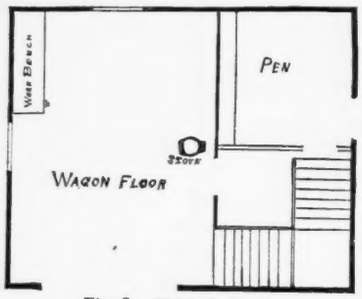


Fig. 2.—GROUND PLAN.

an animal may be crowded into this space if desirable to drench it. Also a stout board should be permanently set in place, one say four and a half feet long, sixteen inches wide, one end fastened to the wall the other to the floor, at an angle of forty-five degrees, with two rings on each side, one at top and one at the bottom. This will be found useful in spaying sows, operating upon ruptures, etc. The cords attached to the rings can be provided with buckles and straps, to quickly secure the legs. A permanent muzzle to slip over the nose should also be at hand. Ordinarily upon the farm, if a pig has to be caught for any purpose the whole family has to be called out to keep the rest of the herd away, and many times an operation has to be too hastily performed. A slide door near the floor should be arranged, so that if desirable the animal could be let out into a sunny lot.

Many breeders now, if a new boar or sow is bought for breeding purposes, no matter how healthy it is supposed to be, put it in quarantine for three weeks before it is allowed to mix with the home animals. If one of the home animals seems ailing with something which is not clearly recognized, quarantine it in the hospital until it develops.

SECURE SHELTER FOR YOUNG PIGS.

In warm weather it is much the best to give a sow at pigging time the range of a small lot, by herself if possible; but if kept in a pen, it is prudent first to put in a six-inch board clear around the sides, fastened to the pen edgewise, about eight inches from the floor or ground. It must be strongly secured, and its object is to afford room for the little pigs, when the sow lies down, to back under where she cannot crush them. Our illustration shows a cheaply constructed form of shelter which affords security for the little pigs, the steep slope of the roof making an angle next to the ground where they can take refuge beyond any chance of being overlain by the sow.

If in a pasture of some size, the sow may usually be left to her own resources with safety, even if there are other hogs in the pasture; but in a small inclosure she should be separated. In pens,

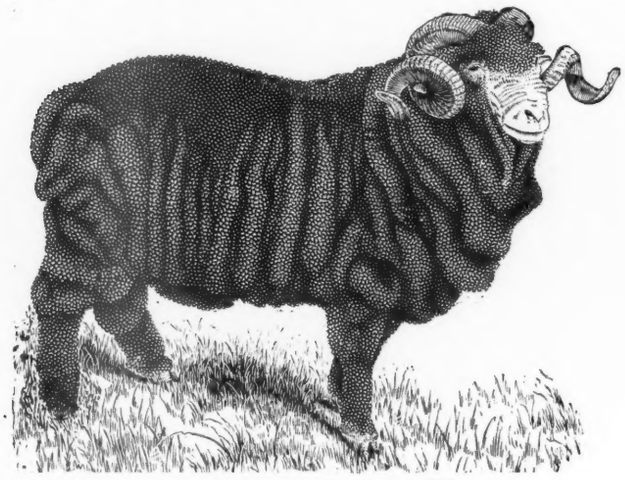
SHELTER FOR LITTLE PIGS.

the mistake is often made of allowing the animal too much bedding. If allowed it, a sow will nose together enough to almost bury herself out of sight, and the little pigs often get entangled and perish. If the bedding is run through a straw cutter it obviates the latter difficulty.

Sows Eating their Pigs. — This is one of the most annoying mishaps that the breeder has to contend with. Gilts are very prone to devour their young, and the habit is most usually contracted from neglect to promptly remove any dead pigs that may have been still-born or overlaid. A very valuable sow of the writer's ate her first litter of seven pigs, and her second of eleven pigs, picking them up as greedily as a wild wolf would have done, unmindful of their piercing squeals, and with a crunch or two putting them out of sight. We came very near doing a foolish thing, namely, knocking her in the head on the spot, and fully resolved she would never have the chance to do the same thing again. But as the months rolled around, we found her with pig again, and in talking with some of the neighbors in regard to it, an old breeder told us that "he had heard that to give a sow a pound or two of old bacon about farrowing time would keep her from it." It seemed plausible, knowing that a morbid appetite was a common sequence of pregnancy in the whole animal kingdom. We did not spare the bacon. The day before the sow farrowed we fed her some two pounds of bacon, and as soon as the pigs were born we fed her several pounds more, probably three or four, at different times through the day, and again the next day. She had littered eleven pigs again; the next time she had thirteen, and the last time fifteen. The precaution of feeding more or less bacon or fat meat was taken each time, and she never offered to molest her pigs, once or twice failing to eat a dead one when she had the opportunity.

AMERICAN MERINO SHEEP.

In the face of all discouragements which come from fluctuations in the wool market, and the unfavorable competition of Australian and South American wool, there is still a strong interest in American Merinos. No other sheep can supply its place in the production of fine wool, or in adaptation to the large ranges west of the Mississippi. The flocks of Vermont, Pennsylvania, Ohio, Wisconsin and others of the older States are bred with great purity, and supply breeding stock for the more Western regions where they are kept mainly for the wool. Many farmers in the Eastern and Middle States find profit in crossing their Merino ewes with rams of English mutton breeds to produce lambs for the market. But



SPANISH MERINO RAM BATAVIA 209.

the male progeny of such crosses should never be used for breeding purposes, or the result will be mongrels destitute of the best qualities of either breed. The type should be maintained pure, wrinkles and all. The clamor against wrinkles is unheeded by good breeders, as it deserves to be. Recent heavy sales of Merinos in Vermont for Australia were selected from wrinkly, densely wooled sheep. Our illustrations show two pure-bred Spanish Merino rams, owned by L. C. Walbridge, Russell Co., Kansas. Batavia 209 was sired by Money Maker 312, dam by Longfellow 85, second dam by Addison. He weighs 175 pounds and yielded last spring thirty-three pounds of unwashed wool, the growth of 345 days. Monroe 319 was sired by Wrinkly 273, dam by Reliable 285, second dam by Torrent 71, third dam by F. H. Davis' Wrinkly 58. He weighs 180 pounds and sheared thirty pounds of wool. It will be seen that these rams trace back respectively to renowned sires and have the blood that has given the American Merinos a world-wide celebrity. Ewes of their get weigh from 110 to 130 pounds and yield an average clip of sixteen pounds.

PREPARATIONS FOR WINTER DAIRYING.

The present is the time to begin preparations for making butter in winter. The first requisite is that the cows shall come during the months of September and October, and calculations must be made accordingly. The advantages of changing from the old system of summer dairying to winter operations are so great that many of the most intelligent and progressive dairy farmers have adopted the latter method. They thus escape the daily and exacting labor of the dairy during the busy summer months, when the general operations of the farm demand the most attention. The cows go dry during the sultry days of midsummer, when the pastures are the most parched and scanty. There is no butter to be kept over through the hot season, when keeping it in good order is the most difficult and prices are the lowest. These and other advantages are greatly in favor of winter dairying, which has been made practicable by the modern improvements in deep setting, preserving fodder in silos, centrifugal separating, etc. With this, as with other important changes, it is the first step which costs. The first step, as indicated above, is to hold the cows back so they will come in during September of next year. In the vicinity of a butter factory it is desirable that the majority of the patrons shall agree to make the change, that the factory may be kept running through the winter. Those who already have cows which will come in next fall, or can buy them, must see that good shelter is provided, with plenty of ensilage, means for taking the chill from the drinking water, etc. It is idle to object to this system as "unnatural" for the cows. The dairy cow, as we have her to-day, is an artificial product anyway, which has been brought to her present state of development by a long course of breeding and care. It is only a step forward in the same direction to change her season of greatest milk flow from summer to winter.

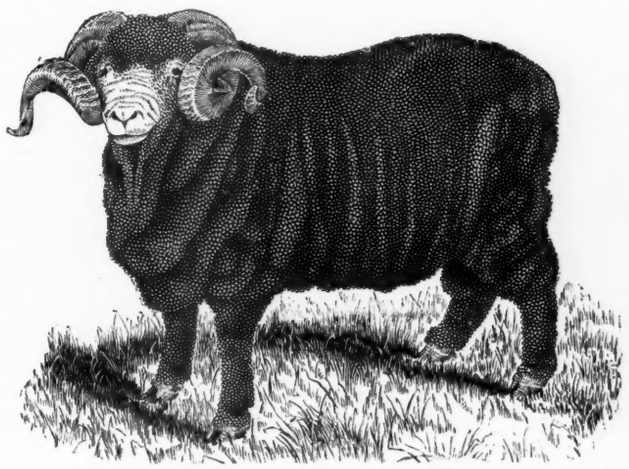
DOUBLE CROPS MEAN DOUBLE PROFITS.

S. HOLLISTER, CONN.

Why not make at least a part of the farm yield double or treble crops in one year? It would be equivalent to having the use of the land one or two years without taxation, for only one crop is usually grown on an acre taxed for the year. The season is long enough for two or three crops in nearly all parts of the United States. We have only an average season here in Connecticut and I have raised two excellent crops on the same land in a year. Oats, or oats and peas, can be followed profitably by turnips, Hungarian grass, buckwheat, or a soiling crop. But do not hope to accomplish this without making the land very fertile. Quick crops will not grow on poor soil.

Have you a field of oats growing on good ground? Don't be afraid to put an extra bag or two of phosphate on it or more manure, even if the grain has begun to wave. When the oats are in the milk harden your heart and put in the mowing machine. They will make the best of hay and nothing will make more milk when fed to cows. Let no time be lost after they are cured, but rip up the soil and sow say English turnips in a mellow seed-bed at once. This is an especially good plan to pursue if the piece were seeded and did not "catch." It can be seeded again with turnips, and there are few crops better to seed with. There is no crop a farmer can raise which will make less work, cost less, and impoverish the farm less for the amount of money it brings than the common Strap-leaf Turnip, and where it follows another crop the same season the profits are even greater, speaking of the crop purely as a means to direct money. If your market be a manufacturing place you will have no difficulty in disposing of a hundred bushels or more. Show me a mechanic who would hesitate about giving thirty cents for a bushel of sound, hard turnips, or a mechanic's wife who would refuse ten to fifteen cents for a peck measure full of fresh blue-tops. Wet the load before starting, and when you ask a person to buy show him the nice roots and let them be moist and fresh. Never let turnips get wilted.

Potatoes and Potatos.—Americans generally, including journalists, write the plural of the tuber with an "e," while "potatos," as it is largely written in England, looks scanty, though we accepted



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"tomatos" without difficulty. The editor of the *Gardener's Chronicle*, in explaining its use of the short spelling of potatoes, states that when he assumed editorial control he found that it had been in use by his predecessor, Doctor Lindley. Knowing that the Doctor was not likely to depart from general usage without a good reason, the succeeding and present editor, Doctor Maxwell T. Masters, consulted Doctor Latham, the eminent lexicographer of his time, who replied to the effect that spelling potatoes without the "e" was not wrong, but simply in advance of the times, and that sooner or later all words without an "e" in the singular (volcano, calico, etc.), would be spelled without that letter in the plural.

OUR BASKET

Clubs can at any time be increased by remitting for each addition the price paid by the original members; or, a small club may be made a large one at reduced rates, thus: One having sent 5 subscribers and $6.00, may afterwards send 5 names more and $4.00, making 10 subscribers at $1.00 each; and so for any of the other club rates. Subscriptions can begin at any time, as every number of the paper is complete in itself.

Bound Copies of Volume 46 (for 1887), uniformly bound, in cloth, gilt backs, will be furnished at this office for $2. If sent by mail, $2.30. We can usually supply at same rate any of the previous volumes, that is, volume 16 to 46 inclusive.

Plant for Name.—Geo. M. Clapp, Muscogee Co., Ga., sends us a specimen of *Medicago maculata* for name. It belongs to the same family as clover and the same genus as lucerne, but is one of the undesirable members of the family. It is a troublesome annual weed, spreading rapidly by means of the burry seed-pods.

Tar Paper for Nests.—"Virginia" asks us: "Would it be advisable to put tar paper in the nests of sitting hens?" The nest boxes may be lined with tar paper to good advantage, but the paper should never come in direct contact with the eggs. By covering the bottom of the box, after lining, with two inches of soil and placing on this the nest material, a most complete nest box will be secured.

Building a Greenhouse.—"Subscriber," New York. As a rule those communications to which the writer fails to sign his name are not noticed. A correspondent may use any signature he pleases, but the real name should also be given. As several others have asked about building a greenhouse, we would say that all needed information will be found in *Practical Floriculture*, by Peter Henderson, issued by the publishers of the AMERICAN AGRICULTURIST.

Tobacco on Land.—"M. O.," Newark, N. J., has been told that no land upon which tobacco has been raised should ever afterwards be used for vegetables, etc., and he asks as to the truth of this. Tobacco is one of the most exhausting of all crops, but other than by impoverishing the soil it cannot hurt it. A plenty of manure, with a green crop or two plowed under, will restore the fertility. It may be cheaper to buy the tobacco than to purchase the fertilizers to restore the land.

Pickling Cucumbers.—Mrs. M. McComb, Wabaunsee Co., Kan., desires information whether cucumbers can be pickled in a short time by putting them down in alcohol and water; a quicker way than brining and then pickling is wanted, "a nice, hard, sour pickle that will sell." We should not think the cucumbers put up in alcohol would sell. It is not necessary to lay cucumbers in brine before pickling them, they may be put in vinegar at once, but on a large scale the former process is the most economical.

Keeping Sheep on Shares.—"New York Subscriber" asks us: "A owns a farm near a large town in New York State, with a good market. B proposes to put on a flock of sheep, of which A is to take entire charge and care of feeding, shearing, etc. To what share of the profits would each party be entitled at the expiration of a year?" Custom varies greatly in different sections of the country in matters of raising live stock on shares. We should be pleased to hear from those of our readers who can answer the above inquiry from actual experience.

Renovating Butter.—J. D. Bunting, Wayne Co., Mich., asks us whether there is any method by which inferior grades of butter can be treated to give good appearance and quality. There are several firms in Philadelphia which make a business of buying damaged butter and treating it by chemical processes to improve its appearance and flavor. The methods are not made public, but it is supposed that solutions of saltpeter and some chlorides are employed. The butter will scarcely pass for "gilt edged," however, after the most skillful manipulation.

Cure for Kicking Cows.—Delano Moore, Aroostook Co., Maine, writes us that he has found a cheap and effective method of heading off a cow's propensity to kick. He buckles a short strap around each hind leg, just above the gambrels. These leather anklets are connected by a stout iron ring, through which each strap is slipped before being buckled. This arrangement does not cut or chafe the cow like a cord or rope, yet restrains every attempt to kick.

The Best Grass.—John A. Reed, Gage Co., Neb., asks us: "Which is the best grass for both meadows and pasture?" No single variety of grass is best for both purposes. For haymaking a grass should have a good growth of stems. For pasture it must make continuous growth through the season, endure close cropping and trampling. Timothy stands at the head of meadow grasses, and blue-grass for pasture. But for either purpose a mixture is best. Besides the two named are red-top, orchard grass, fescue, foxtail, rye-grasses, and many other valuable sorts.

Gum on Peach Tree.—M. Ottis, Essex Co., N. J., finds that "a lump of gum as large as the fist" appeared on one of his peach trees. He asks for cause and remedy. Where gum exudes it is usually due to a wound of some kind, most generally the wound of a borer. Remove the gum, probe the hole with a wire, cutting away if need be, and dig out the borer. If the insect has left the tree cut away any decayed parts around the opening; if this is on the upper side of a branch, put in a plug to keep out the water, and cut so as to leave a smooth clean wound, that it may heal if it will.

Red Cedar from Seed.—J. M. Cooper, Linn Co., Ia. Your failure doubtless came from having kept the seeds dry through the winter. The berries should be taken late in autumn, the resinous covering removed, and the seeds planted. The berries are put into a linen bag with soap and sharp sand, and scrubbed in warm suds until the seeds are liberated from their impenetrable coating. They are then put in a sieve, washed from sand and dirt, and planted in the seed-bed. This is covered with a mulch of straw or dead leaves, which remains on until the next spring. The young seedlings need partial shade during the first summer.

Death of Dexter.—The famous gelding, Dexter, died April 21st, in the stable of his owner, Robert Bonner, of New York. At one time he had the widest celebrity of any horse in America. He was foaled in 1858, the sire being Rysdyk's Hambletonian, and his dam Clara, by Seeley's American Star. The record of 2:17¼, which brought him prominently into notice, was made in Buffalo, August 14, 1867. He was then purchased by Mr. Bonner for $35,000, and permanently retired from the turf. The record was the best ever made up to that time, and the furore created by the performance seems strange in view of the much better records made since.

Making Potash.—D. S. Coleman, Jackson Co., W. Va. Potash is simply condensed lye. As it runs from the leach it is poured into an iron kettle and boiled down until it assumes a syrupy consistence, when it is allowed to cool. The contents of the kettle are afterwards melted at a gentle red heat, and then cooled either in the mass or in moulds. This is the common potash of commerce, which is actually an impure hydrated oxide of potassium. In setting up the leach it is better to place a layer of quicklime in the bottom or mix with the ashes about one-twentieth of bulk of lime.

Color of Yolks of Eggs.—"Malvern Hill," Alexandria Co., Va., desires information why the yolks of eggs are so much lighter in color from hens raised in the city than those of hens raised in the country; also if they are so good for setting as the dark colored ones. The reason that the yolks of eggs laid by hens in cities are of a pale yellow or light color is that the fowls are deprived of green food. The same is the case with hens kept in small enclosures anywhere. Access to green food in abundance, as fowls have it in the country, produces the rich-colored yolk in the egg, in similar manner as it produces the golden colored milk in cows. As a rule "country eggs" are the best for setting.

Movable Comb Hives and Crooked Combs.—Edw. Coats, Douglas Co., Ore., writes us: "I use the Quinby's movable comb hive, but the bees build the comb so crooked and thick that I can't take out one frame without breaking the comb. I make the frames one inch and a half from center to center, and would like to know how to improve upon the management." The Quinby hive is not at fault, nor the distance between the frames. The trouble is that the bees have been allowed to build their combs crooked or crosswise in the frames. The only remedy is to cut them out, and straighten them in the frames. When the combs become too thick, which occurs only around the outer edges where honey is stored, they may be shaved off with a sharp knife. After the combs are once straight in the frames they will remain so, and will never get too thick.

The Bag-Worm or Basket-Worm.—J. H. Slackman, Montgomery Co., Pa. The large oval cocoons you send, on the outside of which many small bits of twigs and mid-ribs of leaves are fastened, are those of the common Bag-worm or Basket-worm (*Thyridopteryx ephemeræformis*). The male insect is a small, dark, stout-bodied moth, the wings expanding about one inch. The females are wingless and never leave their cocoons, but die within them; but as their bodies are filled with eggs these remain uninjured by cold during the winter months, hatching in spring, and the young caterpillars, crawling out in immense numbers from the lower end of the cocoons, soon spread over the trees devouring the leaves. The young caterpillars, when only a day or two old, surround themselves with a small bag or web for protection, and this they ornament with any little bits of twigs within their reach. They always take the bag or basket along as they crawl about in feeding. When they reach maturity in autumn, the bag is fastened to a strong twig, where it remains during the winter. At this season the bags should be gathered and burned with their contents. We do not know of any better or more practical mode of destroying this pest of the orchard and garden.

Old Messenger.—"Mifflin," Iowa Co., Wis., asks about the imported horse Messenger. He was bred in England by John Pratt, foaled in 1759, and imported to this country in May, 1788. His sire was Mambrino, and on the dam's side his pedigree went back to the Byerly Turk. He stood in the vicinity of New York until 1808, when he died the property of Cornelius W. Van Rantz. Messenger was a gray horse, and is described as follows by an eminent horseman who saw him in the stable of Townsend Cock, Burlington Co., N. J.: "He had a large bony head, rather short straight neck, with windpipe and nostrils nearly twice as large as ordinary, with his low withers and shoulders somewhat upright, but deep, close and strong. Behind these lay the perfection and power of the machine. His barrel, loin, hips, and quarters were incomparably superior to all others. His hocks and knees were unusually large, below them his limbs were of medium size, but flat, strong and remarkably clean, and either in standing or in action their position was perfect." Messenger was doubtless the best horse ever brought to America, if judged by the performances of his progeny. He not only produced running horses of the first order both at long and short distances, but was the ancestor of nearly all the American horses which have been distinguished as roadsters and trotters.

Dairying and Raising Calves.—T. M. Morgan, Fauquier Co., Va., asks us whether calves can be profitably raised upon skim milk, purchased at the creamery for a cent a gallon. The question of profit depends largely upon the kind of calves. Calves which possess a good share of the blood of Shorthorn, Hereford or any other breed which naturally fattens rapidly, may be raised with economy and profit on skim milk, with other feeding substances added. But unfortunately for the success of this problem the stock in dairy districts usually contains very little of the blood of so-called beef-breeds, and makes a very much smaller return for the food consumed. A few years ago Prof. Henry of the Wisconsin Experiment Station tried raising sixteen calves picked up at random on dairy farms. They were fed for the first fourteen weeks on sweet skim milk, at twenty-five cents per hundred pounds, warmed to eighty degrees, ground oats and corn, bran, shorts, corn fodder and hay, and turned on pasture. The milk was then withheld, and they were pastured twelve weeks, which took them into the winter, after which they were kept up all the time. The calves were weighed at intervals and the weights noted. The cost per hundred pounds of growth for the first fourteen weeks was $3.14; for the next twelve weeks $3.38; for the succeeding twelve weeks (December 21 to March 15) it was $5.47, and from the latter date to April 26, six weeks, $8.36—making the average cost per hundred pounds of growth $5.09 for the entire forty-four weeks. This was more than the calves would sell for. The same feed and care devoted to grades of any good beef breed would have produced very different results. It will be observed, however, that the price of milk is computed at more than threefold that given by our correspondent.

Insects in the Garden.—S. M. Stevenson, Perry Co., Pa., asks for an effective defence against the little black flea-beetles which devour the leaves of young cabbage, turnip and other plants, and the maggots which work at their roots. For the first-named insect the dilute kerosene emulsion may be sprayed on with a garden engine or sprinkled from a watering pot. Fine-cut tobacco or the stems coarsely pulverized may be used when the young plants are attacked in the seed-bed. The odor seems to repel the insects. Gas-lime is recommended as a destroyer of both the pests named. For the beetle it is sprinkled on the leaves dry or mixed with water. For the maggots it is dug into the soil in doses small enough to avoid killing the plants.

Deep or Shallow Culture for Corn.—William D. Holmes, Steuben Co., N. Y. The old practice of cultivating corn so deeply as to shorten the roots has become pretty effectually exploded. William Cobbett, in his day, advocated "root-pruning" corn in its advanced stages, and the practice was blindly followed by many good farmers. But careful experiments have proved that mutilating the roots during its period of growth injures the corn and diminishes the yield. This is in accord with common reason, for it is evident that root-pruning must check the growth and lessen the vigor of the plant. If the surface is kept mellow and free from weeds, the corn will do better than with deep culture.

The World's Wheat Crop.—According to the estimate of the statistician of the New York Produce Exchange, the aggregate wheat crops of the United States and all foreign countries for the last three years were as follows:

Year.	Bushels.
1885	2,028,000,000
1886	2,025,874,000
1887	2,163,900,000

These figures would show a production for 1887 of more than 135,000,000 bushels above that of either of the two years next previous, a large part of which must be carried over as surplus into the coming cereal year.

Brazilian Flour Corn.—J. W. Peck, Montgomery Co., Ind. The so-called "flour corn" is a true maize, and when ground the product is Indian meal. It is white and contains less oil than the ordinary flint or dent varieties of corn, but has none of the flavor of wheat flour when made into bread or other cookery. It makes excellent johnny-cake, or may be cooked in any way like other corn meal. The corn is worth a trial—on a small scale at first—for just what it is, but the attempt to palm it off under the pretence that the meal is similar in flavor to wheat flour is a fraud. It is in no way related generically to Millo maize, which is a sorghum. The old "Tuscarora" makes a very white flour-like meal, has of late been called "Flour Corn." As a green corn it is preferred by those who do not like the great sweetness of "Sweet" or "Sugar Corns."

Hoose in Calves.—Thos. F. McNamara, who neglects to give his State, asks us what ails the calves in his section. After growing well through the first summer, they are attacked with diarrhœa and swelling of the throat, which results in death after a few days. It is probably hoose or husk, which comes of great masses of worms which fix themselves in the wind-pipe and bronchial tubes, as well as the intestinal passage. The eggs are deposited on grass and herbage, and are swallowed by the calves in grazing in damp places. If taken in time most cases can be cured. Give one teaspoonful of spirits of turpentine two or three times a day in olive or linseed oil. Shut the calves up in a close place and let them breathe the fumes of burning sulphur until coughing ensues. This should be repeated once a day. Keep the affected calves carefully isolated, and allow no cattle to run on the ground infested with the eggs.

Pay of Farm Help.—Ph. Rowland, Litchfield Co., Conn., asks us: "1. Is a man working on a farm by the year obliged to work on such holidays as the Fourth of July, Thanksgiving, etc., or submit to a deduction of wages? 2. If a man is hired for a year, can the employer withhold all his wages until the end of the year?" In the absence of any special contract an employee has no legal claim to wages for holidays upon which he did not render full service. But a farmer who would not cheerfully concede the point to a faithful yearly hand would be not only very mean, but also blind to his own interest. 2. This is a case also in which specific statement should form a part of the contract, though common usage might be pleaded to prove reasonable presumption of a tacit agreement. It is always best though to make a yearly contract specific in its points.

A Successful Farmer.—Dr. George F. Shrady, the eminent surgeon, and editor of the *Medical Record*, is also a practical farmer. On his "sixty acre farm," as he is pleased to call his elegant country seat at Kingston on the Hudson, he carries on a system of mixed husbandry, keeping accurate accounts of all receipts and expenditures. The balance sheets of the year before last showed a clear profit of three dollars and forty-seven cents over and above all expenses, including taxes and wages. Last year he was still more successful, netting a profit of six dollars and ninety-two cents. When it is considered that, as a rule, professional men find the possession of a farm or country seat a most extravagant luxury, the doctor is certainly to be congratulated on his notable success, and still more on answering in so practical a manner the still open question "how to make farming pay."

Feeding Calves.—"Piedmont," Virginia, asks us: "Can male calves of dairy cows be profitably reared to two and a half years old, and then sold as feeders? Is there any economy in using linseed meal, where wheat bran and shelled corn can be had at a cent a pound?" For a partial answer we refer to Mr. Morgan's question and its reply on page 284. But that does not wholly apply to the present problem, for in the Wisconsin experiment the calves were crowded to make the greatest possible growth. In this case it is desirable only to keep the calves in fair growing condition. Two and a half gallons of skim milk per day will be sufficient for the first three months. Linseed meal is an excellent substitute for the cream which has been taken from the milk, but wheat middlings and corn meal will do the same, though there is greater danger of constipation. The milk should be fed blood warm, with the cooked meal and middlings added. Bran is too rough for the stomach of a very young calf, but may be added to the cooked ration after the first three months. Oat meal is an excellent material to feed with skim milk. One pound each of cooked corn meal and oat meal to two gallons of warmed skim milk would be about right. In this, as in the case referred to above, the question of profit depends largely on the breed.

Oil of Sassafras.—Mrs. M. D. Campbell, Taylor Co., Ky., asks how sassafras oil is made; whether the white or red sassafras is used for the purpose, what is the best market and the price for the oil, and after several other queries asks us: "Do you think it will pay to invest in the business?" Queries like these are difficult to reply to; involving the working up of a cultivated material, or, as in this case, one that grows spontaneously. We can easily tell how the peppermint plant is cultivated, but to give one who has no knowledge of the process of distillation instructions in making the oil would be very difficult. The Oil of Sassafras is obtained from the bark of the root. There is but one species of Sassafras; the distinction of "white and red" kinds is apparently very local. Like other oils of this character the material is placed in a tight wooden cylinder which serves as the still-body. Heat is supplied by steam from a boiler, and passing out through a copper worm carries the vapor of the oil with it. The mixed vapors condense in the worm, and the water and oil are separated from each other. In some localities distilleries are established, at which the bark is bought from those who collect it in the surrounding country. A few years ago, Baltimore was the leading market for this oil. We cannot give you the price, as that fluctuates. We do not advise any one to invest in enterprises the success of which depends upon a knowledge which they do not possess, and cannot readily acquire.

A Farmers' Trust.—A convention of farmers from nearly all the Central and Western States, has been held at Topeka, Kansas. The object of the convention was to form a Farmers' Trust, to regulate and control the shipment and distribution of farm products. It was proposed to establish central agencies at Chicago, Cincinnati, Kansas City, Indianapolis, Omaha, St. Louis, Cedar Rapids, St. Paul, Milwaukee and Louisville, where the products furnished by members of the association should be sold. The territory adjacent or tributary to these central points is to be divided into eight districts, and subdivided into sub-districts, by counties, in each of which the central agencies are to be established with a Superintendent, and an Executive Board, authorized to regulate and control shipments, and to act generally for the best interests of those associated with them. It was proposed to organize the farmers, stock growers and breeders into distinct associations, and to obtain from them pledges to submit to the orders of the Executive Board. The Convention, after a full consideration of the objects proposed, organized a Trust with a capital stock of $20,000,000, and prepared to enter at once upon business. Under this "Trust" it is believed that farmers will secure better prices for their products and be enabled to defeat the schemes of monopolists and jobbers. It remains to be seen how such an organization will work. Its success must depend largely upon the kind of men who are to direct its destinies.

Animal Ailments.

Broken Leg.—H. M. Adams, La Porte Co., Ind., writes us that he has a very nice yearling heifer, which broke her leg just below the knee. She eats and drinks well, but cannot bear any weight on the broken leg. If too valuable to kill, the heifer should be placed in a sling for one month or six weeks at least, and her leg kept in splints after it has been set, which will need the assistance of a skillful veterinarian.

Stifle Out of Place.—C. W. Reed, Huron Co., Ohio, writes us for advice in regard to a colt which, when quite small, strained its hind leg so that the stifle occasionally flew out. This occurred a month ago, and it now has grown very much worse, so that the animal can hardly take five steps without its flying out. The colt was a year old in May. The colt should be put in a sling and kept as quiet as possible for a month or six weeks; also apply a cantharides blister, which it may be necessary to repeat. This is a very unsatisfactory thing to treat, and we should advise the consultation of a reliable veterinary surgeon.

Catarrhal Mammitis.—John M. Eddy, Saratoga Co., N. Y., writes us: "A disease has appeared among our cows and is becoming wide-spread. Lumps about the size of a pea form inside of the teat, closing the milk passage. In many cases the milk can only be drawn with milking tubes. What is the matter, and the remedy?" From the description, it seems to be catarrhal mammitis, a highly infectious disease. Isolate every affected animal. Administer a saline cathartic, like Glaubers salt. Rub the udder and teats well with camphorated oil, and inject the teats with a solution of carbonate of soda. Wash the hands and milking tubes thoroughly after milking an affected cow, to avoid carrying the infection to others, and destroy all bedding after it is used.

Rickets or Rachitis.—Ernest H. Cole, Sonora, Mexico, writes us that a large number of his mule and jack colts become crooked at the knee joints, and the legs turn either inwards or outwards. The trouble seems to be confined to certain districts or ranches. From the description we should think this to be rickets or rachitis. The colts may be born with it. It also comes from mal-nutrition, as when they are not allowed to suck enough, or when the mother is worked hard. But it is seen mostly in animals that are fat and heavy and do not have enough salt. Remove the cause. Give free access to the mother; also give nutritious food with tonics, such as cod liver oil, iron and lime water, and bone-dust. When the legs are crooked use splints. If the pasture is poor it must be changed.

Loco Poisoning.—W. M. Burkitt, Dawes Co., Neb., sends us a plant for name, asking if it is "loco weed," and if so, whether it is actually poisonous, and the remedy. The plant inclosed is the *Oxytropis Lamberti*, one of the so-called "loco weeds." There is some conflict of opinion as to its toxical effects, arising from the fact that horses and cattle unaccustomed to the weed avoid it as long as good feed can be had. But when a taste is once acquired for it, the animal soon refuses all other food and spends its time in a wild search for the fatal weed. Strange hallucinations and distortion of vision are the first symptoms of "loco poisoning"; emaciation ensues, with partial paralysis, apparent excitement of the nervous system, starvation and death. Examination after death reveals a diseased condition of the mucous and serous systems. The tissues of stomach and intestines are found to be so greatly degenerated that a finger can be punched through them by a very slight pressure. This accounts for the derangement of the organs of digestion and assimilation. The pathology of so-called "loco poisoning" has never been discovered. The most careful chemical examinations to which these plants have been subjected, have failed to reveal the presence of any alkaloid or other active principle. Stranger still, both the *Oxytropis* and *Astragalus molissimus*, the other "loco weed," belong to the pulse family, which includes clover, alfalfa, peas, and many other useful but few injurious plants. Of the effects of these weeds, however, there is no room for doubt. Horses and cattle will remain uninjured for entire seasons in pastures infested with the "loco weeds," because they avoid them. But repeated experiments have shown that when a taste is once acquired for them, a fatal termination is certain, if the animal is allowed further access to the weeds. As to remedies, the first thing is to place the animal, in the early stages of the disease, beyond the possibility of obtaining the "loco." The following treatment is then recommended by Dr. Harding, of Kansas: Take pulverized belladona, ten grains; corrosive sublimate, one grain; licorice, one ounce, and enough glycerine to make a thin paste. Mix and give a tablespoonful at a dose, repeated twice a day. A blister behind the ear and counter-irritants along the spine are also recommended. The food should in every case be soft and non-irritating to the stomach.

THE CHINCH BUG PEST.

An important and timely bulletin has been issued by the United States Department of Agriculture upon the Chinch Bug. The bulletin was prepared by L. O. Howard, U. S. Assistant Entomologist of the Department, and contains a general summary of all that has been learned about the history, habits, etc., of the minute but destructive pest. The importance of the subject is shown by the

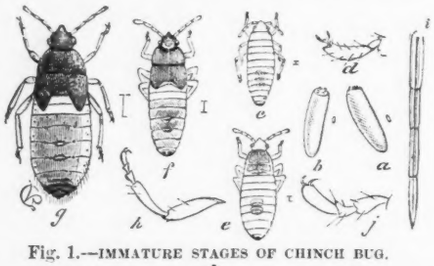


Fig. 1.—IMMATURE STAGES OF CHINCH BUG.

a, b, eggs; *c*, newly hatched larva; *d*, its tarsus; *e*, larva after first molt; *f*, same after second molt; *g*, pupa, the natural sizes indicated at sides; *h*, enlarged leg of perfect bug; *j*, tarsus of same still more enlaged; *i*, proboscis or beak, enlarged.

fact that during last year the damage inflicted by Chinch bugs in nine Western States amounted to more than sixty million dollars.

It appears from the facts set forth that the Chinch bug is a native of the Southern States, but has become fully acclimatized east of the Rocky Mountains, flourishes as far north as Minnesota, and is found even across the line in Canada. In fact, it is so invulnerable to cold that specimens found imbedded in solid ice became lively when thawed out, and it requires an exposure to dry winds at a temperature of fifteen degrees below zero to freeze them to death. The insect feeds upon all the grasses, but its favorite food in its larval and perfect forms are wheat and corn, and barley, oats, rye, millet and most of the forage grasses are not unwelcome. It was first observed about the close of the eighteenth century in North Carolina, where it did much damage during the following four decades; was first described by Say in 1831 in a pamphlet published in Indiana, where he resided; became troublesome in Illinois and Missouri in 1839 and 1840, entered Iowa in 1847 and Wisconsin in 1855. It is in the States named and the newer ones west of them that the Chinch bug has proved the most numerous and troublesome, being almost unknown in New England, and never in formidable numbers in New York or the other Middle States. The general appearance of the Chinch bug in its various stages of growth are shown in the accompanying illustrations after Prof. C. V. Riley's drawings. Figure 1 shows the immature stages from egg to pupa, and figure 2 the perfect insect. All are enlarged, the hair lines indicating the natural size. There are no less than ten varieties of Chinch bug besides the one here illustrated, all of which differ only in slight variations of color, except one, the short winged (fig. 3), of which the wing covers are much shorter than the abdomen. There are other insects which closely resemble the Chinch bug, but the real insect may be readily detected by its strong "bed-buggy" odor, which is often perceptible even before the insects are in sight.

The eggs (*a, b*, in figure 1) are laid in spring upon the underground roots of infested plants, or, in case the ground is very damp, upon the stalks and blades. The larvæ, nearly as soon as hatched,

Fig. 2.—PERFECT CHINCH BUG.

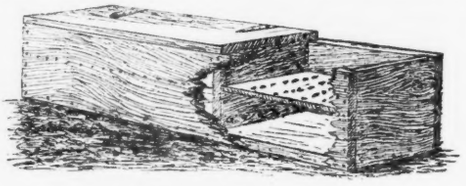
Fig. 3.—SHORT WINGED CHINCH BUG.

proceed to business by inserting their beaks into the tender stalks and sucking the juices. They are active, grow rapidly, and in from five to seven weeks have moulted four times, passed the pupa stage, and become fully developed insects. Two and in some cases even three successive broods are produced in a single season. Its disgusting odor is an ever-present protection against most enemies, but there are a few insects and birds which prey upon the larvæ and more advanced forms of the Chinch bug. Among the former are two varieties of lady-bird, the Weeping Lace-winged Fly—the Insidious Flower-bug—which so closely resembles its prey that it is frequently mistaken for it, and the Many-banded Robber (*Milyas cinctus*). Of birds no others are so efficient as quails in maintaining a war of extermination on these predaceous pests. They hibernate in just such situations as are frequented by the quails throughout the winter. The pinnated grouse, cat-birds, some of the thrushes, and a few other birds occasionally eat Chinch bugs, but not in such quantities as the quail. Disease sweeps off the Chinch bugs by millions. The most destructive appears like an epidemic, and so virulent as to completely clear whole regions of them in a few days. It is induced by cold wet weather, which is inimical to them, even if they escape the epidemic.

Of artificial means for checking Chinch bugs, clean cultivation, burning all rubbish in autumn, and such rotation as excludes the plants upon which they feed are all found partially effective. Of destructive remedies nothing is found more effective than dilutions of kerosene emulsion, applied by means of a force-pump or even a common watering pot. The emulsion is made by mixing two gallons of kerosene, half a pound common or whale-oil soap, adding a gallon of boiling hot water and agitating the mixture for ten minutes until it forms a creamy emulsion. For use this is diluted with nine times its bulk of cold water. This is cheaply made, easily applied, and very effective, not only for Chinch bugs but also for a great number of other insect pests.

WATERING TROUGH FOR POULTRY.

John W. Shaver, Brown Co., Nebraska, furnishes a sketch and description of a practical device shown in the accompanying illustration. It consists of a wooden trough three feet long, eight inches wide, and six inches deep. A lid two feet long and eight inches wide is hinged to one edge of the trough, and when closed covers two-thirds of it. The open end is divided from the other by a trans-



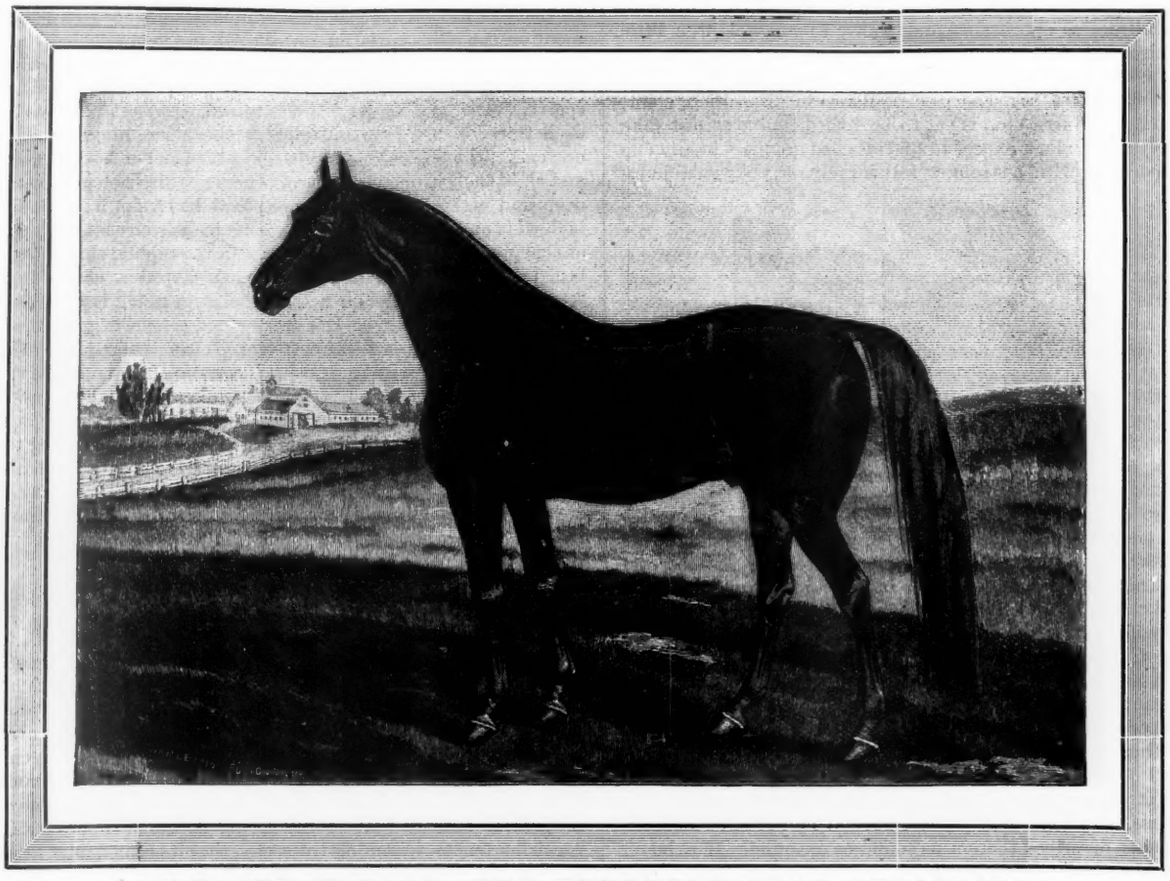
PROTECTED WATERING TROUGH.

verse board having a series of small holes, for the passage of water, near the lower edge. A float is fitted loosely into the open part of the trough, to keep the chickens from drowning. This float is a piece of pine board, a little less than twelve inches long and eight inches wide, bored full of three-quarter-inch holes. It floats free on the surface of the water. The fowls obtain access to the water by means of the holes. The float not only protects the small chicks from drowning, but also keeps the wattles of full-grown fowls from becoming wet and frozen in cold weather. In the engraving, one side of the trough is broken away, to show the internal construction.

Feeding Hogs for Fat or Lean.—The experiments conducted by Prof. W. A. Henry, at the Wisconsin Agricultural Experiment Station, last year, in feeding hogs, have excited much interest. The character of the growth was found to be largely influenced by that of the food. Regarding these experiments Prof. Henry writes to us: "I am repeating the experiment in different forms, and have confirmatory evidence that the composition of the body of the hog can be very considerably affected by the kind of food given. Do not try to show in the AMERICAN AGRICULTURIST that we can produce carcasses fat and lean at will for the table, because the modifications by feeding have in reality a rather narrow range. If we can modify the form slightly in one generation by the way we feed, it is natural to conclude that in a few generations we can very materially affect the form and constitution of an animal by proper or improper feeding. The hog being a greedy animal and easily satisfied when enough food is supplied, has been greatly abused, especially here at the West, in the great corn district. The sermon I wish preached from the text I have given is one in breeding rather than producing lean meat as against fat for the table, though we certainly can increase the lean by proper feeding to a degree worthy of consideration, and its flavor is also capable of being improved. Witness the Irish and Southern bacon in comparison with that of Illinois."

THE ROAD STALLION FAYETTE WILKES.

The Blue Grass Region of Kentucky is not only one of the fairest spots the sun shines on, but is also claimed to be "the center of the horse kingdom." Whether this claim is fully conceded or not "the blue grass" is certainly the home of many fine horses, both thoroughbred and roadsters. One of the handsomest of the latter class is Fayette Wilkes, who is represented herewith, standing in his blue grass pasture near Lexington, Ky. He is a worthy son of a renowned sire, and combines in his veins the blood of some of the greatest horses ever owned in this country. Fayette Wilkes is a son of George Wilkes, which horse was the sire of eleven horses with records of 2:13½ to 2:20, and forty-nine more with records of 2:30 or better. George Wilkes was not only the greatest son of Rysdyk's Hambletonian, but was unapproached by any other road stallion that ever lived, in individual performance and the achievements of his progeny. The dam of Fayette Wilkes was Sally Hamlet by Hamlet, the sire of six trotters with records of 2:19 to 2:29. Hamlet was a son of Volunteer by Rysdyk's Hambletonian. Through his second dam Fayette Wilkes inherited the blood of the imported thoroughbreds Yorkshire and Woodpecker. He thus represents the two great families of Hambletonians, upon a foundation of thoroughbred, four removes back. He was foaled May 3, 1878, is fifteen hands three inches high, rich bay with black points. He is owned by Gen. B. J. Treacy, of Ashland Park Stud Farm, Fayette Co., Kentucky.



FAYETTE WILKES.—THE KENTUCKY ROAD STALLION.

Begin on the Colt.—There is no danger of handling and feeding the colt too early. The handling properly should begin as soon as the colt is dropped. When two months old, halter it and teach it to lead. The earlier this work is begun after the colt is made docile by handling, the easier it is. As soon as the colt has become acquainted with the halter, tie it up and rub and brush it. This must be done gently until the colt is accustomed to it, and will submit quietly to a more vigorous use of the cloth and brush. The thrift of the colt is wonderfully increased by a daily grooming. This extra thrift brings such a good return that the grooming is well paid for. It pays to give the colt meal, wheat bran, and oats as soon as it will eat them; and if it can get at them it will learn to eat very soon. A good plan is to put up a box behind or at the side of the dam's stall, low enough for the colt to reach into it easily. In this put a little bran and meal each time the dam is fed. The colt will soon learn to eat this, when oats may be added. You cannot begin to feed and train the colt too early.

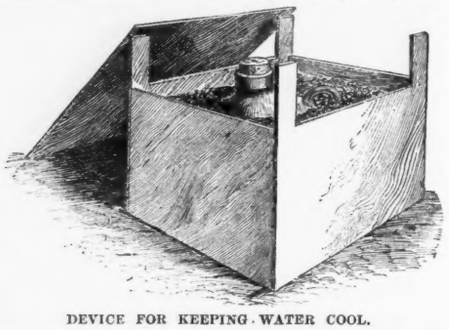
SELECTING THE FAMILY HORSE.

The first and most important matter in keeping a family horse is to secure the right kind of a horse. The most elaborate and costly stable conveniences, and the best care and feed are thrown away on an unsound, vicious or faulty horse. The family horse should be sound in wind and limb; kind, honest, and intelligent. As to size, no arbitrary and universal rule can be given, for this must be governed by the specific wants of each case. For ordinary driving in a light single vehicle, a horse weighing from ten to eleven hundred pounds is the most desirable. But there are many cases in which a heavier horse is required. In some cases a half-bred Percheron or French draft horse, weighing twelve to fourteen hundred pounds is found admirably fitted to purposes of general utility. It is used to plow and cultivate the ample family garden, haul loads of a ton and more, or, hitched to a carry-all, will trot off with the entire family. The Cleveland Bays and French Coach horses are also coming into deserved favor as general purpose horses. Yet the cases in which these heavy horses are wanted for the family are exceptional, and the general rule remains in favor of compact, well-built horses not exceeding eleven hundred pounds. Probably nothing ever came so near the ideal of a family horse as the Morgans. In size, color, disposition, action, and general characteristics the Morgan horses were about all that could be desired for general purposes, and in selecting a family horse, if one otherwise desirable can be found, with authentic evidence of Morgan blood, even three or four removes back, that fact is greatly in its favor.

On this matter of selecting a horse, Mrs. L. M. Knowles, of Michigan, writes us: Shakespeare describes a horse as "Round-hoofed, short-jointed, fetlocks shag and long." Never mind the long fetlocks, good breeding is indicated by short ones; but be sure it has sound hoofs of fair size and a good frog and broad heels. "No frog, no foot; no foot, no horse." The pasterns should be short, with round, smooth ankle-joints, good-sized cannon bone, also

short, with clean-cut ligaments and strong tendons, good-sized knee, and hock-joints clean and bony, long forearm, and from point of hip to hock stifles wide apart; broad and muscular hips, a well-muscled and slightly-arched loin, short back, sound barrel, deep girth and oblique shoulders, a broad chest and nicely arched neck, fine at the throat-latch, and a head of the good old Morgan type. Such a horse is a model, with docile and tractable temperament, resolution, power of endurance, and pleasing appearance. It has a prominent eye, wide forehead, broad jowls, fine muzzle, and nicely shaped ears. In addition to the above hints, the horse must be well-bred, well-broken, well-groomed, well-shod, and well-fed, and it will be the joy of the household. As to color, this is to some extent a matter of fancy. It is said "a good horse is never a poor color." In hight, the horse should be fifteen and a half to sixteen hands, and weigh from ten hundred to twelve hundred pounds. A horse too heavy will not last on the road, and too light an animal will lack the strength to take a family carry-all or surrey, with four or five persons, a good spanking gait and stay the distance. In addition to an attractive appearance and ability to pull weight, a little speed is also desirable.

E. G. Clough, of Massachusetts, gives some hints well worth attention. He writes us: The perfect horse, in disposition, color, style, action, soundness, etc., is yet to be foaled, and we must take facts as they are, and not expect to find all good qualities in any one horse. In dealing with a stranger rely largely on your own judg-



DEVICE FOR KEEPING WATER COOL.

ment, and endeavor not to be misled by any questionable statements he may make. See that the horse stands squarely on its feet, and that it does not toe out behind, or toe in forward. Run your hand slowly and carefully down the inside of each leg; if there is a bunch there you will feel it. See that the feet are sound and well spread. A dark hoof, if sound, is always preferable to a white or streaked one. Look sharp at the eye. A bright full eye denotes spirit; a mild, pleasant eye, with a brownish cast, indicates a pleasant, affectionate disposition, while an eye with a good deal of white denotes temper. There is perhaps no other way to judge a horse's disposition so well as by a careful study of his eyes, and too much importance cannot well be attached to the necessity of a good disposition. In every case, take a bill of the horse, written by the seller himself, with the horse described therein as sound or unsound. If a buyer is personally acquainted with any reliable person who has a satisfactory horse for sale, it is better to purchase of him, even though it may cost more. Nearly every man feels indignant at the suggestion that he is not competent to handle any horse, while the fact is this: that after you and I are taken out of the list, there remain comparatively few men really competent to handle a fine, high-strung, nervous horse, although it may not be in the least vicious. Many a man has made a serious mistake by getting more horseflesh than he can handle. They may lack that patience required with a wide-awake horse.

BOX FOR WATER JUG.

How to keep cool the water for the man far afield is an important question during the hot weather. An earthen jug is the most convenient receptacle. But in it, though it is kept in the shade, the water will soon become too warm if the day is quite hot. Our illustration shows a box in which the jug is set, and sawdust is packed firmly around the jug, leaving a little more than the mouth exposed. The sawdust retards the transmission of heat to the water. The box is provided with a cover, so arranged—as shown in the engraving—that the air passes freely over the sawdust. A cup is part of the outfit. The box is tilted enough to pour out the water without moving the jug. A store box can be utilized, or a rough box can be made easily by any one that is handy with tools.

A HOME-MADE MOLE TRAP.

The mole is not a wanton marauder, and his underground work is done in pursuit of grubs and other injurious insects, albeit some incidental damage is done by his tunneling. But the proprietor who looks aghast at the disfiguring ridges in a handsome lawn, and the choice plants dying from severed roots, is very likely to lose sight of

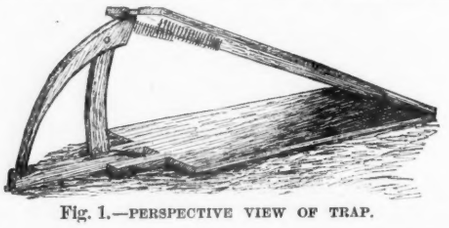


Fig. 1.—PERSPECTIVE VIEW OF TRAP.

all that can be said for the defence, and pronounce summary judgment on the sleek little burrower. Of the many devices invented for its destruction one of the latest is illustrated herewith, from sketches by J. W. Teeters, Macoupin Co., Ill. Figure 1 gives a perspective view, and figure 2 is a sectional view. It has two boards, each thirty inches long and eight inches wide, hinged together at one end. The lower one has in the other end a slot an inch wide and eight inches long. The two corners are also notched two inches deep and eight long. The upper board has a slot in the middle an inch wide and half an inch deep. One inch from each edge is a row of sharp wire teeth six inches long. In the middle slot of the lower board is hung a trip made of inch board, shaped as shown in figure 2, and playing loosely on a small bolt. A notch is near the outer extremity, in which rests the narrow end of the trigger, the broad upper end of which is supported by the curved standard. To work this trap it is set with the business end directly across the runway of the mole, into which the trip is sunken by digging away the earth. The upper board is raised into position, as shown in figure 1. The little rodent, finding his path obstructed, in trying to clear it lifts the trip, which liberates the trigger from the notch, and the cataclysm follows. The efficiency of the contrivance may be increased by attaching a heavy weight of some kind upon the top of the upper board.

MY NEIGHBOR'S FENCE-ROW.

JAMES K. REEVE, OHIO.

Early this spring, while my neighbor and myself were at work in our respective gardens, he took occasion to commiserate himself upon the smallness of his plot, and to contrast his narrow opportunities upon his quarter acre with the possibilities of my own four acres. He said his garden was so small it hardly paid for cultivating, but if he had more room he thought he could make something. It was in vain that I told him how I sometimes wished mine was of no greater extent; that in the spring so much time was taken in repairing fences, trimming trees, etc., that it seemed as if little time was left to work in the ground; and that when the battle with

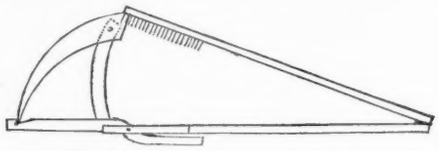


Fig. 2.—SECTIONAL VIEW OF TRAP.

the weeds was on I was sometimes tempted to wholly abandon the contest. By this time we were both leaning across the division fence, and glancing along it (on my neighbor's side) I noticed a strip averaging fully six feet in width and running the entire length of the fence—about ten rods—that was left untouched by the plow. When I called attention to this, and asked if it was not to be cultivated, I was told that "it was about as close as the plow could get, and was rough ground and wouldn't pay to work, anyhow."

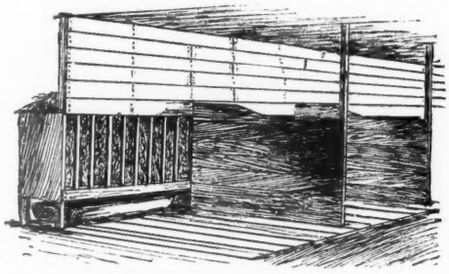
By making use of all his available land this man would have had about twelve thousand square feet of cultivable ground; and yet, while complaining that he had so little, nearly one-fifth of this—counting fence-rows upon both sides and rear of lot—were being willfully neglected. Because a piece of land is to be measured by feet or yards instead of rods and acres some men seem to think it can have no value for agricultural purposes. Upon my own side of the fence I did not feel that I could afford to give so much space to

the weeds and grass, and when I found, once upon a time, that it was in the same condition as my neighbor's, I worked it all over carefully with a spading-fork, throwing out the stones and other rubbish that will accumulate in neglected fence-rows, and turning the leaves and weed-stalks and grass well under that they might continue enriching the ground beneath as they had long been doing the soil upon the surface. Men who have small areas—three, five, ten or twenty acres—are less apt to complain of their lack of land than those who have fifty, a hundred, or more acres. The reason is that those who have only a little land have been impelled toward methods of close cultivation that have gradually brought them to a knowledge of possibilities; while those who have a moderately large estate have adopted the cursory methods of ordinary farming, which are only the least unsatisfying when applied to the largest possible areas. It may be "finical farming" to go over the half acre intended for the strawberry or asparagus bed with a spading fork and a hand-rake, in order to get out every stone and bit of rubbish; but the one who does it will have the best crop and the best profit. The expense of producing a crop lies mainly in the cost of land and of labor. The first of these is fixed and cannot be changed; and if it could be would have no effect upon the value of the resultant crop. As the cost is fixed and we must pay it, in interest and taxes, whether used or not, let us make the most of every foot of it.

The cost of labor is to some extent under our control; too often our attention is given solely toward minimizing this cost per cultivated acre without due regard to its effect upon the question of profit. But so long as the cost of the land is a fixed quantity, and some certain expense for labor must be undertaken, a better plan would be to consider whether we cannot, by adding somewhat to this latter, gain a better profit from both factors of cost. A husbandman has been defined as "one who makes the best use of his opportunities." And to do this one must not only cultivate the fence-rows but every other portion of the ground that has been awarded to his care.

IMPROVED HAY-RACK AND FEED-TROUGH.

The old-fashioned overhead hay-rack is objectionable in many ways. It is not in accordance with the habits and structure of the



HAY-RACK AND FEED-TROUGH.

horse, which in a state of nature does not, like a giraffe, take its food from trees, but from the ground. Besides the unnatural strain caused by reaching up to a high rack, the dust, hay seed and chaff are drawn into the throat, lungs and eyes of the horse. The rack shown in the accompanying illustration is cheaply built, and free from all the objections to a high rack. The vertical slats are four feet long, of any tough hard wood. Saplings with the bark on are as good as anything. The ends, rounded off to the proper size, are set into holes bored in scantlings. The lower side of the rack is sixteen inches above the floor. The opposite side of the partition is boarded up as shown. The bottom of the rack is of slats two inches apart, to allow the escape of dust and seeds. Resting on the floor below the rack is a trough for oats or other feed. This is ten inches deep, and of any desired width and length. It is drawn out to be filled, and then pushed back within reach of the horse. Instead of this a permanent feed-box may be made at one end of the rack, a few slats being left out for the purpose. A hay shute directly over the rack and opening into the hay loft is a great convenience.

Making Ponds in Porous Soil.—In many localities, notably in the West, where the soil is several feet deep and somewhat porous, it is exceedingly difficult to make a serviceable pond, as the soil will not hold the water. One of our Illinois subscribers recently made a pond in soil four feet deep, using the soil from the excavation to form the bank. Hence, when the excavation reached the clay subsoil, the bank reached nine feet above the bottom of the pond—high enough. But only a very little water remained in the pond, as it flowed out as soon as it reached the soil. To remedy this, our subscriber dug a ditch a foot wide and a foot deep around the inside margin of the pond. This was filled with clay taken from the center of the pond, the clay being compacted as it was filled in. This bank of clay was built up as a layer a foot thick against the bank. It was well compacted, and the loss from the pond since has been only that due to evaporation.

A SMALL BARN FOR $300.

The barn illustrated herewith was designed by Charles Staples, of Ulster County, N. Y., for the accommodation of one horse, with

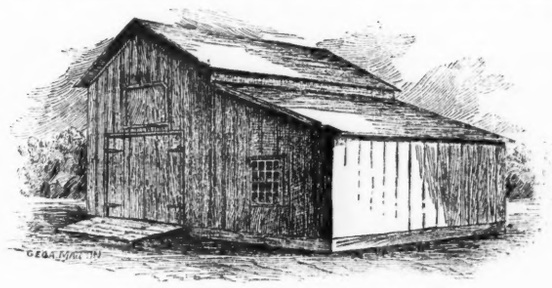


Fig. 1.—PERSPECTIVE VIEW OF BARN.

necessary forage, and a buggy or wagon. Figure 1 gives a perspective view. The upright part is fourteen feet wide by sixteen long, with sixteen-foot posts. The lean-to is ten feet wide, sixteen long, and eight feet high at the eaves. The sills all around rest upon piers of field stone, or, in their absence, on cedar blocks set below the frost line. The first story, figure 2, has a carriage floor with a flight of stairs to the hay-loft. Beneath the stairs is a closet for harness. The lean-to has a box-stall ten by twelve feet, with a passage giving access to the oat-bin and hay-rack. The latter is constructed on the plan described and illustrated in another article of this paper. The barn is enclosed in vertical boarding with three-inch battens. The roof is shingled. A barn of this size and style can be built in good substantial manner for three hundred dollars.

Sheds for Cattle in Summer.—Take the country over and shelter for farm animals is as necessary in summer as winter; for while in the North the greatest need of shelter is in the winter, in the South it is in the summer. Even in the North the cattle should have summer shelter. For protection from the sun, a wide spreading tree is perhaps best. There are considerations other than the comfort of the animals for providing such shelter. If they can be in a cool place while their food digests, they will digest a higher per cent of it and assimilate it better. Whatever adds to the comfort of animals adds to their thrift and therefore to their profitableness. There should be other summer shelter than trees, for trees do not protect from rain, and there are cold rains in summer which do much hurt to animals exposed to them. Hence the necessity for sheds. These may be open—are best open, since they will be the

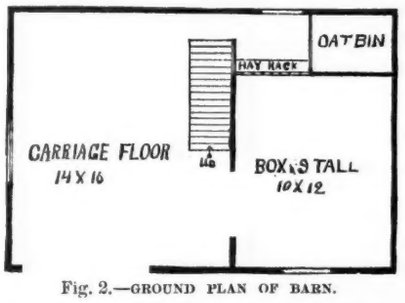


Fig. 2.—GROUND PLAN OF BARN.

cooler; and may have a straw, clapboard, or board roof. If boards are used for the roof, they should not be nailed fast, but weighted down with heavy poles. Then they may be turned every few weeks to correct the warp made by the sun. Have these sheds large enough to accommodate all the animals. The sheds for the hogs or sheep are best made only four feet high, thus keeping out the cattle or horses, which are apt to drive the swine and sheep out into the rain when they can. If there is any doubt about the wisdom of having these shelters, notice how quickly the animals will get to them when there is a cold rain or hail storm, or in the heat of the day.

THE GROWTH OF WHEAT, AND ITS PRODUCTS IN THE MILL.—XI.

JOHN J. WILLIS, SUPERINTENDENT OF LAWES AND GILBERT'S EXPERIMENTAL FARM, ROTHAMSTED, ENGLAND.

The descriptions of wheat grown in Sir J. B. Lawes' experimental field at Rothamsted, during the forty-five years over which these investigations have extended, have been five in number, as follows: 1844–48, Old Red Lammas; 1849–52, Old Red Cluster; 1853–81, Red Rostock; 1882 and since, Club Wheat (red); all of which varieties are well acclimatized, and, with the exception of the first, not very dissimilar kinds. It is generally supposed in England that red wheats are hardier in character and upon the whole better adapted for autumn sowing than white varieties, but outside of the British Isles the reverse is more usually the practice. The best wheats shipped from the Baltic are autumn-sown whites, and the same may be said of the wheats shipped at the Atlantic ports of Canada and the United States. In order to test by actual experiment the true value to the farmer of different varieties of red and white wheats when sown in the same field and season, and under exactly similar conditions as to manure and mechanical treatment of the land, Sir John Lawes selected twenty-five varieties of wheat, fifteen reds and ten whites, and grew them for twelve years in succession, choosing a different field each year, but one in a good state of fertility. The following table gives a summary of the results obtained.

Experiments with Twenty-five Different Descriptions of Wheat grown at Rothamsted for twelve years in succession, 1871–82. Summary of the Dressed Grain in Bushels, per Acre, and the Weight per Bushel, in Pounds, of the Dressed Grain:

DESCRIPTION OF WHEAT.	DRESSED GRAIN PER ACRE.	WEIGHT PER BUSHEL, DRESSED GRAIN.
	BUSHELS.	POUNDS.
1. White Chaff, red	22¾ to 59	51⅞ to 63
2. Rivett's Bearded, red	16 to 67	49½ to 60½
3. Chubb Wheat, red	14⅞ to 55½	53 to 62⅞
4. Red Chaff, white	32¾ to 48¾	60½ to 63½
5. Browick, red	19⅜ to 51½	52⅜ to 62½
6. Red Wonder	22 to 55½	52½ to 63
7. Burwell or Old Red Lammas	27 to 47½	55½ to 64¾
8. Bristol Red	21⅛ to 53⅜	54⅜ to 63½
9. Red Nursery	27½ to 47¾	57½ to 66
10. Red Langham	25¾ to 53½	54½ to 63⅜
11. Woolly Ear, white	20 to 51½	52½ to 63⅜
12. Hardcastle, white	21½ to 54	52⅜ to 63½
13. Golden Drop, red	18⅞ to 52¾	52¾ to 64¾
14. Victoria, white	14⅞ to 45½	51½ to 63¾
15. Hunter's White	17⅜ to 45⅜	55 to 63⅜
16. Original Red	26 to 44¾	56½ to 62¾
17. White Chiddam	11⅞ to 47½	54½ to 64⅛
18. Red Rostock	8½ to 57	54 to 63½
19. Casey's White	15⅜ to 52½	55⅜ to 63½
20. Golden-rough Chaff, red	14⅜ to 52½	54½ to 65½
21. Bole's Prolific, red	24½ to 52¾	55½ to 63⅞
22. Club Wheat, red	16⅜ to 61	52⅞ to 63½
23. Main's Standing, white	16½ to 50½	56½ to 61⅜
24. Main's Rough-chaff, white	15⅞ to 50⅜	53½ to 61⅜
25. Belgian, white	9¾ to 52½	51¾ to 60¾
MEAN	21½ to 51¾	53½ to 63½

Fifteen reds average forty-three and a half bushels of fifty-seven and one-eighth pounds.

Ten whites average forty-three and five-eighths bushels of sixty-one and a quarter pounds.

Thus we find an average range of from twenty-one and a quarter to fifty-one and three-quarters bushels of dressed wheat, with an average range in weight per bushel of from fifty-three and a half pounds to sixty-three and a half pounds. The highest produce being obtained with Rivett's Bearded, red, which yielded a maximum of sixty-seven bushels, and Club Wheat, red, which gave in the best year sixty-one bushels per acre. The greatest weight per bushel of grain was reached by Red Nursery, sixty-six pounds being recorded, the next in order being Golden-rough Chaff, red. It is seen that there is very little difference in the average yield of the red and white wheats; but the whites record an average excess of weight of four and one-eighth pounds per bushel, which in a large quantity of wheat would amount to something considerable. The most powerful element the farmer has to contend with is the character of the season or unfavorable climatic conditions. At the same time it must be borne in mind that much may be done by a proper selection of seed, and that reversion takes place more easily than improvement. The weight per bushel of wheat is found to be dependent on various causes. High weight is almost, if not always, an evidence of high quality, but is not necessarily a characteristic of a large, plump, well-matured berry. For instance, the hard red spring wheat of the Northwest, which is small in size, and not well matured in the sense of having a plump grain, with its usual amount of starch, is very heavy in its weight per bushel, while the large, full wheat of Oregon, which is very starchy in composition, is light in weight.

Rothamsted Wheat Experiments—General Character of the Produce and Average Quantities of the Grain grown, per Acre, on Selected Plots, over each of two ten-year Periods:

DESCRIPTION OF MANURE.	WHEAT GRAIN PER ACRE.		WEIGHT PER BUSHEL.		NITROGEN, PER CENT.		POTASH, PER CENT.		PHOSPHORIC ACID, PER CENT.	
	10 Yrs. 1852-61.	10 Yrs. 1862-71.	10 Yrs. 1852-61.	10 Yrs. 1862-71.	10 Yrs. 1852-61.	10 Yrs. 1862-71.	10 Yrs. 1852-61.	10 Yrs. 1862-71.	10 Yrs. 1852-61.	10 Yrs. 1862-71.
	Lbs.	Lbs.	Lbs.	Lbs.	P. C.	P. C.	P. C.	P. C.	P. C.	P. C.
Without Manure	944	881	55.8	59.4	1.98	1.70	33.5	33.2	49.8	50.3
Farmyard Manure	2145	2485	58.8	61.3	2.05	1.84	31.7	32.2	52.8	52.2
Mineral Man. alone	1163	1007	57.2	60.5	1.95	1.71	32.3	32.8	51.7	50.9
Ammo. Salts alone	1318	1553	55.1	59.1	2.07	1.90	34.0	34.1	46.3	45.8
Mineral Manure and Ammonium Salts	2163	2309	57.8	60.7	2.09	1.85	32.9	33.4	51.0	50.1
Mean of all Plots	1740	1833	57.1	60.2	2.04	1.80	32.8	33.2	50.5	49.6

It has been established by the Rothamsted experiments that the amounts of the mineral or ash constituents found in a total crop of wheat have a very direct connection with the amounts of these ingredients available within the soil upon which the plants can feed. Also that the final distribution of the mineral constituents in the wheat grain and straw respectively is not in proportion to the amount in the total plant, but is materially influenced by the seed-forming characteristics of the seasons. The foregoing table shows that in the second period of ten years (1862–71), with its higher seed-forming and better maturing characters, there was a lower percentage of nitrogen in the grain, a somewhat higher percentage of potash, and a lower percentage of phosphoric acid. In the case of the farmyard manure plot, the lower percentage of potash in the grain-ashes are not due to a deficient supply by the soil; but rather to a full and available quantity of every constituent throughout the periods of growth and maturation, and a different character of ripening accordingly, as indicated by the very high amounts of phosphoric acid. That the percentage of potash and phosphoric acid are also low in the grain-ashes of the mineral manured plot, which receives abundance of potash in the manure, but no nitrogen, is doubtless due to the utter want of luxuriance during the earlier stages of the crop's growth, and to eventual sluggish ripening.

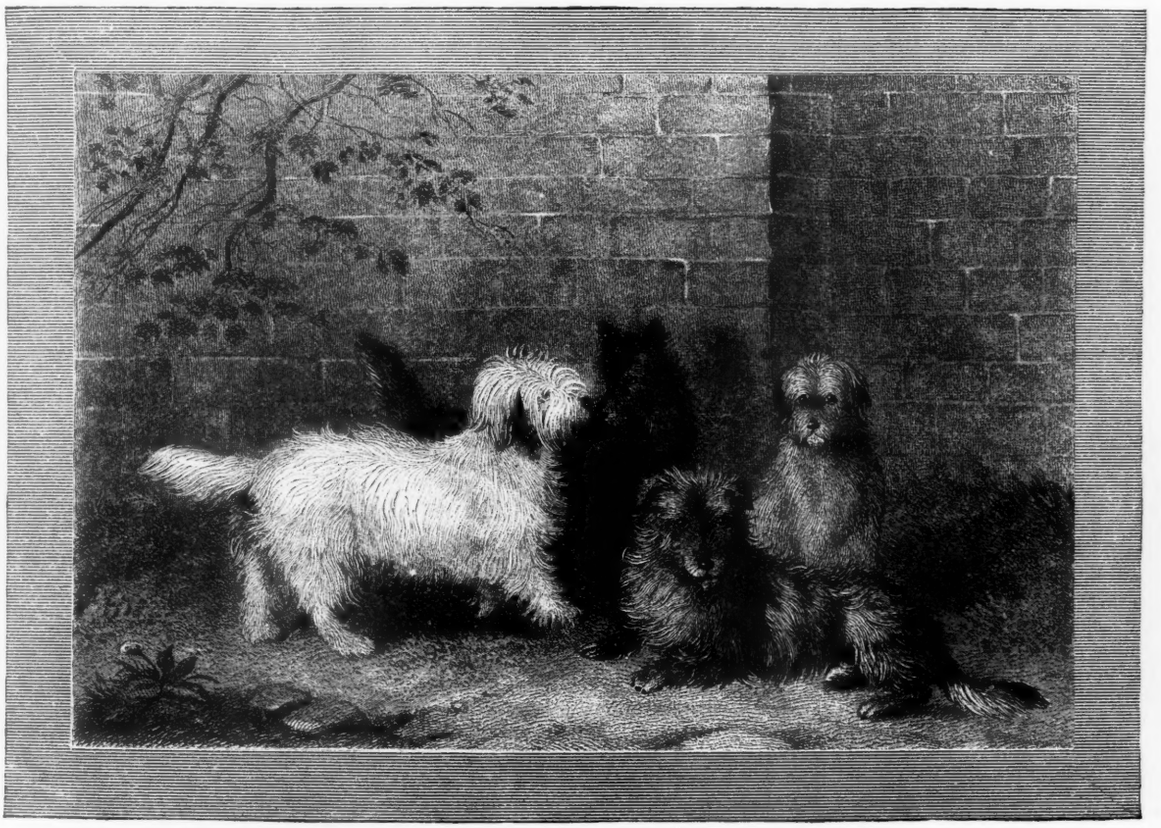
With regard to ferric oxide (iron) it may, says Lawes and Gilbert, perhaps be established that iron plays an important part during the vegetative or green stages of the life of the wheat plant; but there is not evidence of equal weight leading to the conclusion that iron is essential to grain formation, though its accumulation in the seed may be of importance when the young plant grown from it first produces green leaves. It is found that with a lower proportion of total ash-constituents in the wheat grain of the better maturing periods, there is (with slight exceptions in the case of lime and sulphuric acid) a lower proportion of each individual ash-constituent in the dry substance of the grain under each of the very different conditions as to manuring shown in the foregoing table. This lower proportion of ash-constituents to organic substance produced is moreover coincident with a lower percentage of nitrogen and albuminoids in the dry substance of the grain, under each of the five conditions of manuring. It is also coincident with a higher weight per bushel of the grain in every case. The lower proportion of the several ash-constituents is therefore associated with better ripening, a lower proportion of nitrogenous, and a higher proportion of non-nitrogenous, constituents (carbohydrates) produced.

Investigations at Rothamsted and elsewhere have established that there is a general increase in the percentage of nitrogen proceeding from the finer to the coarser flours obtained from the same wheat-grain, and that there is marked increase in the more branny portions, the greatest concentration being immediately below the pericarp. The percentage of potash, lime, magnesia, and phosphoric acid, also increases from the finer to the coarser flours, and it is the highest in the branny portions. The percentage of potash is about ten times, of lime four or five times, of magnesia fifteen to twenty times, and of phosphoric acid more than ten times, as high in the dry substance

of the bran as in that of the finer flours. It is also established that, in comparable cases, the better matured grains contain the lower percentages of nitrogen and total mineral matter, and a higher percentage of starch; and the analyses of the ashes consistently show a lower proportion of the chief individual mineral constituents in the wheat grains of better quality.

SCOTCH AND SKYE TERRIER DOGS.

They are truly "a rough lot," if judged from appearance alone. The shaggy coats, awkward muzzles, stumpy legs, and general appearance are not in accordance with any artistic standard of beauty. But if they are judged by the rule of the vicar's wife, "Handsome is that handsome does," these dogs possess qualities better than mere comeliness. The bright eyes, glowing under the fringe of hair, are expressive of the keenest intelligence; and no animal can be more faithful and devoted to its master than one of these rough



A ROUGH LOT.

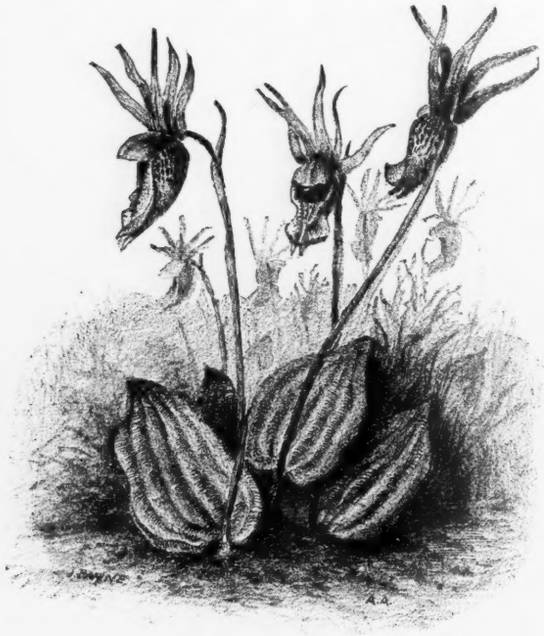
little terriers. "Grayfriars Bobby," that watched night and day for years upon the grave of his pauper master, despite all efforts to coax him away, is commemorated by a bronze statue, and his story, wherever told, has called forth admiration and sympathy. An English writer says of the Scotch terrier: "At home he proves a good house-dog, and his quaintness and high intelligence render him a most lovable companion; affectionate to a degree, he is not given to quarrel, but once aroused he shows himself possessed of the very essence and spirit of Polonius's advice, and 'bears himself so that his adversary must beware,' for he can both give and take punishment." There is a great diversity of points with these useful little dogs—harsh hair and soft hair, lop ears and erect ears, being seen among them. The colors also vary, the prevailing ones being various shades of gray, brindle, or "mustard." The white dog in our group is one of the somewhat rare "Lady Macdonald" strain, which are said to have descended from a white dog rescued from a wreck on the Scottish coast.

"Kiss the Book."—In the courts of many States, a witness is sworn to "tell the truth, the whole truth, and nothing but the truth," with his hand upon a copy of the Bible, and after this the book is presented for him to kiss. In other States, the Bible is not made use of, at least not unless one of the lawyers thinks that on account of the religion of the witness it will add to the sanctity of his oath. At a trial in Newark, N. J., not long ago, Dr. Drescher, "State Analyist" of New Jersey, was a witness, and, on being sworn, made only a pretext of touching his lips to the soiled volume. After the lawyers had made their arguments, the counsel for the opposite side raised the point that the doctor's oath was invalid, as he had intentionally avoided "kissing the book." The doctor admitted that he was afraid to touch his lips to a book that had been kissed by so many others, for fear that disease might be communicated, saying that he "did not think it safe to touch his lips to it." The judge ordered the case to be re-opened; the doctor gave the soiled cover of the Sacred Book a sounding smack and then vigorously scrubbed his lips with his handkerchief. On the few occasions when the writer has been a witness in court, he has asked of the judge that he might "affirm" instead of "swearing," as he preferred to not take any *bacteria* or *microbes* with his oath. It is a violation not only of personal rights but of proper sanitary regulations to compel one to place his lips in contact with so foul a thing as the binding of a court Bible.

The Highway Cow.—Few objects are more to be pitied than the highway cow. Her fare is scanty, and her lot hardship and abuse. She must steal or starve, and her look shows that she is conscious of being a thief. Her owner cares little for her, and by all others she is hated. Her food and treatment being what they are, she can not be profitable to anyone, and to the owners of land in her vicinage she is a source of vexation and loss. Why she exists no one can tell, for if it were not for her three-fourths of the fencing now required would not be needed; this saving would pay for good pasture for her, not to speak of the cessation of damage to crops. The principle which allows her to exist is wrong; it is contrary to that which once prevailed in the English law; it requires each landholder to fence all other men's cattle out, instead of his own in. The law is wrong, not the highway cow. Hence do not abuse her, though she is exasperating. When she has eaten off all your cabbage, or destroyed bushels of your ripening wheat, do not put the dog on her, and club her unmercifully when you get her in a corner, but make a sturdy resolve that you will vote against animals running at large. Here as elsewhere prevention is better than cure.

THE NORTHERN CALYPSO—(*Calypso borealis*).

Those who read of the great beauty and brilliancy of the flowers of the plants of the Orchis Family, and hear of the great prices paid for plants of them, will think, when told that this little Calypso is an Orchid, these plants must be greatly overpraised. But beauty does not always consist in size or showy color, and the real lover of flowers will find beauty in the most humble and modest in-



CALYPSO BOREALIS.

dividuals. One who examines the *Calypso* closely will certainly find it beautiful and interesting. Calypso was a maiden of ancient fable who tried to win the love of Ulysses, who already had a wife and family. The plant is found in the cool portions of Europe, Asia, and America; it is found from Northern New England to Michigan and northward, usually in woods of spruce and upon beds of sphagnum moss. The simple stem is three to six inches high, arising from a solid bulb, and bearing a single leaf, and is terminated by a solitary flower, as shown in the engraving. The parts of the flower are purple, pink and yellow, and delicately marked. The lip, as the lower division (petal) is called, is much enlarged, somewhat like that of the "Lady's Slippers" (*Cypripedium*). There is but one species, *C. borealis*. Those who have a suitable rockwork, where the needed moisture and shade can be provided, can cultivate the Calypso by bringing the roots from their native localities. It may also be cultivated, with other hardy orchids, in a cold greenhouse. The drawing was made from a clump growing in a pan of sphagnum and sand, kept properly wet and shaded, in which condition it flourished finely.

Black Knot.—"Recent Subscriber," Port Henry, N. Y., writes us: "The plum trees in all this section are perishing from what is called 'black knot.' Is there any remedy?" Black knot is a diseased growth due to a fungus, and the trouble is communicated from one tree to another. If the disease is taken in hand upon its first appearance, when first seen breaking up through the bark, and the branch removed, or, if the branch is large, the affected portion cut entirely away, down to sound wood, afterwards washing the wound with a solution of chloride of lime (bleaching powder), it can, if this is persisted in, be subdued. Where the neighborhood is filled with diseased trees it will be of little use to try to cure your own, for your neighbors' trees will continue to infest them or any new ones that may be planted. If all plum growers in the vicinity would agree to cut down and burn every diseased tree, and if the healthy trees remain free from the "knot" for a couple of years, it may be safe to plant new trees. The knot often attacks the Morello cherry, and may exist in a locality where there are no plum trees, and when these trees are planted the cherries communicate the disease to them. Thorough cutting, if it takes the whole tree, is the only hope for the present trees; if beyond this, cut down all the diseased trees and do not plant any more plums until the disease appears to be extirpated in the vicinity. It has been stated that yellow plums are less liable to the knot than those with purple fruit, but this is not well established.

THE ARABIAN STAR OF BETHLEHEM.

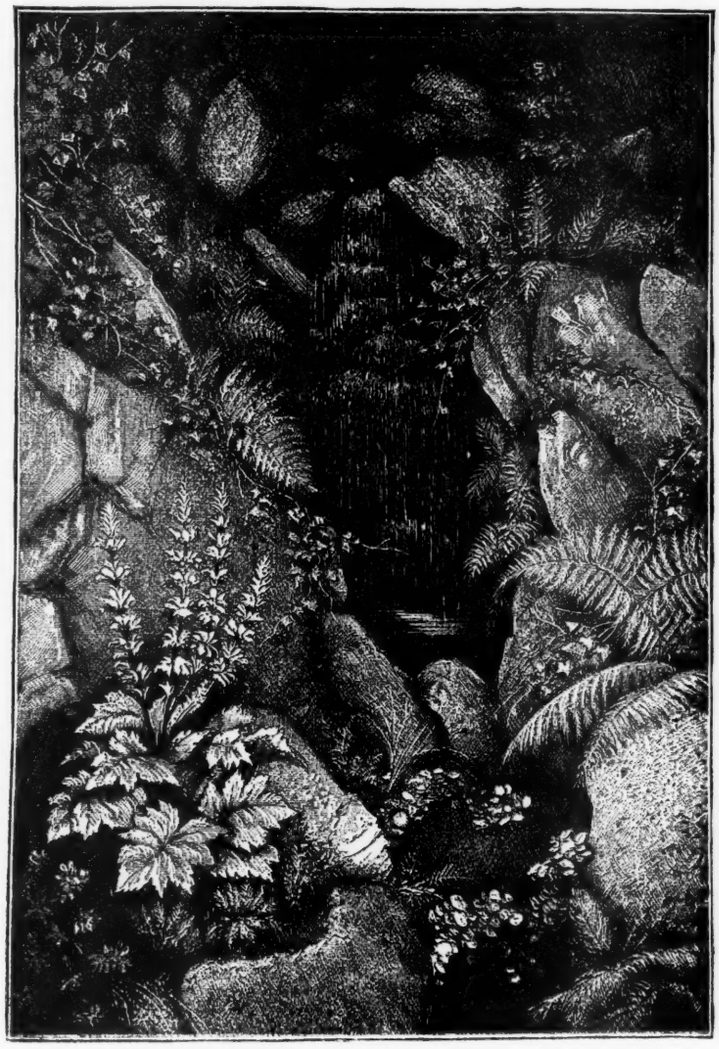
The common name, "Star of Bethlehem," was given to plants of the genus *Ornithogalum*, it is said, on account of the resemblance in the shape of the flowers to that of the Star of Bethlehem as represented in the old religious pictures. The common name in France is *Dame d'onze Heures*, or "eleven o'clock lady," in reference to the fact that the commonest species does not open its blooms until late in the forenoon. The botanical name of the genus is Ornithogalum, and was given it by the ancients; it is from the Greek words for "bird" and "milk," supposed to have reference to the milk-like whiteness of the flowers in some species. The common "Star of Bethlehem" (*O. umbellatum*), is a native of Continental Europe, and though it is well established as a weed in England it is not regarded as a native of that country. It was formerly very common with us in gardens, and in the older States it has escaped to the meadows and roadsides, and in some localities is frequent as a weed. The Arabian Star of Bethlehem is not confined to Arabia, but was first sent to England from Egypt, and is a native of most Mediterranean and many Asiatic countries. It was introduced into England early enough to be described by Parkinson in his "Theatre of Plants" (1656), where it is called "The Great Star-flower of Arabia." Though a plant of great beauty and merit, we rarely see it in cultivation. It is hardy in England, but we are not aware what its northern limit of hardiness is with us, our stock not being large enough to risk any for an experiment; but treated like the Hybrid Gladiolus, it would be well worth the slight trouble of taking up the bulbs in autumn and replanting in spring. It is an excellent plant for a cool greenhouse or window culture and may be grown in pots or in water. Its large bulb throws up numerous narrow leaves and a strong stem twelve to eighteen inches high. The flowers are in an umbel at the top of the stem, where they form a large cluster, each flower over an inch across; the divisions spreading and of a remarkably brilliant whiteness. This conspicuous whiteness is no doubt enhanced by the large ovary (immature seed-vessel) in the center. This is of a green so dark that against the divisions of the flower it appears to be almost black. This ovary is surrounded by six stamens in a circle, which add to the beauty of the flower, and are worth exam-

ORNITHOGALUM ARABICUM.

ining. Aside from the brilliance and symmetrical beauty of the flowers, they have a decided and a pleasing fragrance. Added to these good qualities, which make it a desirable window plant, is that of remaining in flower for a long time—several weeks. It may be multiplied by offsets; and seedlings, if the seeds are sown as soon as ripe, often bloom in the second year. The seeds should be sown in a pan or box where they can have proper shelter from the sun.

ROCKWORK—AN EXAMPLE.

A few years ago, when it was known that a Rock Garden or Rockery, placed, executed and planted to represent nature, was a pleasing feature in gardening, there was a "craze" for rockwork. Such structures were built in the middle of a lawn, where, did one crop out naturally, the first step would have been to apply a blast and get rid of it as foreign to the artificial character of a properly kept lawn. Then the materials used in the structure were often as unlike nature as the situation, varying from a heap of promiscuous stones, which no geologist ever found in such close relationship, to a structure of slag masses or red sandstone, stuck together with cement and often whitewashed (!), with "pockets" in which geraniums and various moisture-loving things were planted, to slowly dwindle and gently simmer away their lives. Happily these absurdities are, in later years, seldom to be seen, thanks to a more correct taste. Still there are often retired spots where a rockwork is the proper thing, and such structures are desirable if their planting is directed by competent knowledge; for there are many plants of exquisite beauty that are natives of Alpine and other mountainous localities that can hardly be made to grow save in a position somewhat like that in which they are found in nature. A properly made rockery will supply these conditions; at least so many of them that most Alpine plants will flourish in a satisfactory manner. A rockery can only be a success when it is planted and cared for by one who both knows and loves plants. If the average jobbing "landskipper" is to have a hand in it, failure only will follow. There is one condition essential to be observed in constructing a rockwork, that is, to avoid making "pockets." There should be an abundance of crevices, and these should be filled with proper soil—some with peaty soil made open with admixture of sand; in others good pasture loam with broken sandstone mixed with it, or broken limestone, for such plants as are natives of calcareous localities. But whatever the soil, the crevices that hold it should widen downward, and above all they should connect with the soil below. It should be so compacted that it will not contract and so shrink as to allow air to come in contact with and shrivel up the roots. No rockwork should be built with overhanging cliffs; the plants do not need sheltering from the sun or rain.



ROCKWORK AT TORQUAY, ENGLAND.

Most Alpine plants have very long and abundant roots; these, when planted in a proper crevice, will follow it for a long distance to find abundant soil. It is a common notion that Alpine plants need shading. If their roots reach moisture their above-ground portion will not suffer; in nature these plants are often exposed to the fullest sunlight. It sometimes happens that a natural ledge or exposure exists which may be planted with suitable plants with happy effect, and we give an illustration of the manner in which a structure built for another purpose was converted into a rockwork with excellent results. "Lauriston Hall," at Torquay, England, like many other dwellings at that watering-place, for the sake of the picturesque views, was built upon an eminence, and so near the edge of its steep bank that safety required a heavy retaining wall. This was built with massive stone arches, forming a series of compartments formerly used for storing pots and other rough matters, until a few years ago the idea was suggested to convert this structure into a rock garden. The work was intrusted to Messrs. Veitch & Son, the well-known nurserymen and florists, whose landscape gardener, F. W. Meyer, the designer of the work, found great difficulty in overcoming the artificial character of the arches. Building other rockwork, and introducing large masses of rock in great variety, the desired effect was produced. The two central arches, there being ten in all, being too dark for plants, were converted into a cavern, ornamented with many stalactites, etc.; the others were, according to the amount of light, planted with Alpine and other suitable plants, while still other arches were converted into ferneries, devoted to kinds requiring similar treatment. A walk allows of a promenade through the whole series of arches. The *Gardeners' Chronicle* gave an illustration, here reproduced, of one of these divisions, which a dripping water-fall, apparently issuing from a chasm in the rock, converts into a suitable place for moisture-loving ferns and other plants. We quite agree with the *Chronicle* when it says: "The plan of thus converting grim walks and ugly brick arches into things of beauty can not be too highly commended."

Chicory as a Weed.—Messrs. R. A. Foote & Son, Addison Co., Vt., are much troubled with Chicory (*Cichorium Intybus*) as a weed, and wish to know how to get rid of it; they also wish to know if this is the kind of Chicory that has a commercial value. This is the same plant that is cultivated largely in Europe, but is not available in its wild state, in which it differs from the cultivated root as much as the wild parsnip and carrot differ from the cultivated. Cultivated Chicory requires very rich soil in order to produce marketable roots. As a weed, Chicory has extended greatly during the last twenty-five years. It is one of those plants the seeds of which are provided with a tuft of down, by which they are scattered widely by the winds. With such weeds, the most important step is to prevent their bearing seeds. It would not be difficult to keep it in subjection in your fields were it not that the abundant plants along the roadsides and in waste lands keep your grounds well seeded. So long as roadsides and railroad embankments remain nurseries and seed-beds of weeds it will be very difficult for the farmer to keep his own ground clear. Legislation should be called in to help, and "Village Improvement Societies" should take the matter in hand. Let no railroad charter be granted in future that does not provide that the corporation shall keep its embankments and other lands from being a nuisance. Such lands, if laid down to grass, might be a source of profit.

California Vine Product.—The product of wine for the last five years has averaged 16,000,000 gallons; the raisin product last year was 800,000 boxes, of which Fresno County produced 360,000. In 1873 the raisin product in California was but 6,000 boxes. The grape brandy produced last year in California was 800,000 gallons.

THE HOUSEHOLD.

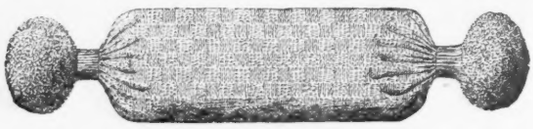
LOVING THE BABY.

MRS. ALICE GOLDSMITH.

Young mothers are often told not to make idols of their babies, but are seldom warned against not loving them enough; and yet many children after their earliest babyhood have their loving little hearts starved and their sweet natures perverted, for want of an absorbing mother love. Mothers lavish care on their children and look after their practical wants, but for want of having had their own love nature developed, shrink from making any other demonstration of their affection. The rosy-cheeked lad whose mother never fails to see that he is properly mittened and coated before he starts to school would often far rather have his heart warmed by a mother's kiss than to have his body warmed by her care. Don't be afraid of loving the little ones too much. I can often ward off a fit of impatience or sulks in my little lad of five by calling him to my side and spending a few moments in caressing him. No matter how busy I am at the moment, I feel more than rewarded by his little loving epithets. I never forget that the Angel of Death may be standing without my gates waiting to snatch my treasure. When the sunlight has gone out of your life, when the naughty hands that yesterday seemed so troublesome are forever at rest, and the little tongue that once nearly drove you frantic with its questions is silenced and can never again lisp your name, it will be too late to show the love you would then give your life to express. Love your children, mothers. Don't be afraid of loving them overmuch; they were made to be loved. But love doesn't mean injudicious indulgence. American children are proverbially disrespectful to their parents. This argues a weakness in their home rule, but not by any means an excessive love. To allow a child to grow up a boor for want of wise teaching is mistaken kindness, or rather it is not kindness at all. A boy whose mother has been weak in her management of him will be apt, not only to have little affection for her, but to have that little mixed with contempt. It is to the home life that we must look to so surround a child with gentle influences and kindly courtesy that a rude word shall be impossible to him.

A COMFORTABLE HEAD-REST.

The cushion shown herewith is called "the rolling-pin" rest on account of its similarity to the well-known kitchen utensil of



ROLLING-PIN HEAD-REST.

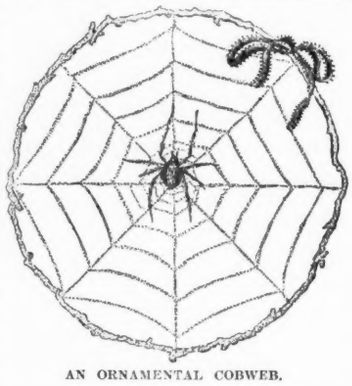
that name. It can be made of any serviceable color of "midnight yarn." It is knit in what is termed the basket pattern, that is, four stitches of plain knitting, four turned, and so on. First a cushion is made of curled hair or feathers the desired size. Then the cover is knit to fit snugly around it. Join the edges and gather the ends closely together. Two very full tassels are made to resemble pompons for the ends. These are trimmed so that they are round; the upper part of the tassel is wound around to make it smooth. These are sewed firmly on. A ribbon is tied around these and through the back of the chair to keep it in place.

FANCY NAPKIN.

Now that it is customary to have fruits, flowers, the vinegar cruet, or salt and pepper bottles placed in the center of the dining table instead of a large caster, pretty devices for this purpose are made of linen to lay on the cloth. Some of these are elaborately embroidered. The design seen in our illustration consists simply of a large damask napkin, folded and crimped up in such a manner as to almost lose its identity. The napkin should be starched and ironed perfectly smooth. First fold the four corners over to meet in the center. The space left in the middle by turning the four corners under should be determined by the size of the flower or fruit dish that is to be set on it; now iron these folds in, and crimp the edges around with a knife. When a plain napkin is used, lay a pink or blue doily in the space in the center. The embroidery as seen in the illustration adds considerable to the appearance of the device, and requires but very little work. The cherries are stamped on, and are outlined with cardinal and olive floss. It should be laid diagonally across the table.

ORNAMENTAL COBWEBS.

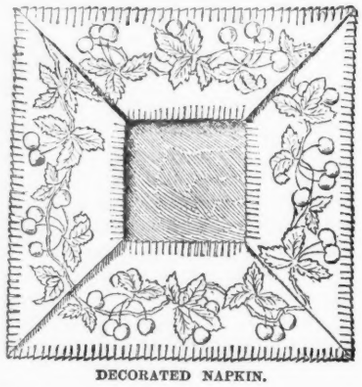
Although good housewives are always ready to tear asunder a natural cobweb, none would probably object to the ornamental device shown in our engraving. It is formed of silver tinsel on a hoop made of twigs tied together and wound with the tinsel. It may be used to ornament wall-pockets, whisk-broom holders, or almost any fancy article, or it may be hung in the window. The tinsel, which comes in balls at three cents each, is simply wound from side to side as seen in the illustration. The webbing is made by carrying the tinsel from one cross-piece to another, tying a knot on each to hold it in place. A bow of tiny blue ribbon is tied where it ends. The spider is made of bees-wax, blackened with ink; fine black wire is used for his legs. These odd-looking creatures can be purchased at any Japanese store for a few cents, ready for use.



AN ORNAMENTAL COBWEB.

SUMMER FASHIONS.

The new French bodices for summer dresses can hardly be called basques, as they are minus either tails or postilion pleats at the back, and are simply rounded or pointed, with the drapery gathered on the edges and closely following its outlines. Whalebones extend to the end of the point, and cause it to slope gracefully over the tournure, which should be merely a very small pad of hair. The two shortest reeds in a set of extenders are the only ones now used in skirts, and these are often omitted entirely from evening dresses. The fronts of French bodices are extremely short, pointed an inch or so below the waist line and covered by a girdle. Another novel feature is an attempt to do away with the high, standing collar and leave the throat bare to the collar bone, the neck being finished by a turned over knife-pleating of silk or a lace barbe. This is not generally becoming, however, and for the present will only be adopted by those who have short plump necks. White dresses are not worn as much as formerly, the fancy this season being for colors; but some charming white woolens are displayed, with silk selvages like repped ribbon or borderings of gold or silver, this last forming a particularly stylish trimming. They are made up with the full corsage which we have described in a previous number, with lapped fronts and with a girdle of wide watered ribbon, sewed high in the side seams, and tied in a small bow in front.



DECORATED NAPKIN.

Light-colored veilings and French cashmeres are extremely pretty for evening wear and are embellished with bands of galloon in preference to lace. This gimp forms V's on the front, covers the collar and cuffs, and borders the lower skirt. The new Jerseys are so different from the original skin-tight affairs that started out under that name as to be scarcely recognized as the same things. They are now most elegant bodices with many-boned seams, are elaborately draped from the shoulders, display handsomely braided vests, or are gathered to a pointed yoke, wrought with jet, gilt or steel. They are useful and pretty to wear with various skirts, as are also the soft silk blouses, tucked from the neck down in a point and drawn up with a drawing-string round the waist beneath the skirts. Cool, fresh-looking

French percales and muslins come now with wide borders on one selvage and are made up very much as they were many years ago, with a full polonaise falling open over a skirt of the same, that is trimmed with a deep Spanish flounce, sewed above the knees and finished by a small standing ruffle at the top. The polonaise is belted round the waist with ribbon. The trimming of waists is far more considered than that of skirts, although bands of ribbon, velvet or galloon often run around the bottom of the underskirt and outline the draperies, while occasionally a side panel is seen; but as often the garniture appears only on the corsage, forming or edging the vest, encircling the collar and cuffs, and set on in *motifs*.

Buttons are little used, it being a fancy to have no apparent opening, and for a lady to look as though she had been poured into her clothes. The embroidery or braiding on the front of basques, however, is sometimes matched with small, unpretentious buttons of metal or beads. It is an English style which largely prevails to wear a black hat and wrap with dresses of all colors; and the latter is generally a very small and jaunty affair, covering only half of the arms. It is formed of silk, velvet, or beaded grenadine, and is heavy with jet. In colored bonnets, a noticeable feature is the very lavish use on them of gilt braid, lace, and tinsel, while a rather pretty caprice is to veil the flowers, or perhaps the whole hat, with a single thickness of fine black or white lace, gauze or net. This has a soft and quite pleasing effect. A stylish trimming for sailor hats consists of a full ruche of black lace encircling the crown, the whole veiled with lace, and a scarf of the same depending from the back and twisted about the throat. If liked, the back of the brim may also be caught up against the crown with a cluster of flowers.

CROCHETED SOCKS.

The socks shown in our illustration are not only pretty but durable as well, and the rule for crocheting them is very simple.

SERVICEABLE SOCKS.

Use ordinary eyed needles and No. 300 silk, white, pink, or light blue. Make a chain of 13 stitches, crochet all around it with a single chain, widening in the center of the top each time for 25 rows, then slip the needle in the 9th stitch from the center point and crochet around to within the 9th stitch on the other side, 3 chain, turn a double crochet in every stitch, taking it through the back part of the stitch, when you have 6 rows done in this manner turn the sock inside out and crochet it together. A row of open work is crocheted around the top to run the ribbon through of 1 double crochet with 2 chains between. There are six rows of double crochet in the leg. It is finished on the top with a scallop. The scallop is also crocheted around the little cap or point that turns over in the front. These little socks are very pretty when made of silk and fine saxony combined.

Chocolate.—Like coffee and tea, this most delicious beverage, which is so easily made, generally degenerates into an uninviting compound under the hands of the ordinary cook. Put into a saucepan two squares of chocolate, two tablespoonfuls of sugar and two of water; melt slowly over the fire, and when melted add one pint of hot water, boil five minutes and add a pint of hot milk. It is improved for some tastes by the addition of a little vanilla just before removing from the fire, and by placing a spoonful of whipped cream on top of the cup. Prepared thus it makes a delicious beverage.

AN INEXPENSIVE WORK BASKET.

Cut of stiff white cardboard five pieces of the shape seen in figure 1. Each piece is to be six and a half inches long, and two and one-quarter inches wide. These may be decorated by painting, decalcomania, or spatterwork according to one's taste and skill. Then bind them all around with silk ribbon one-quarter inch wide, and of any shade desired; overhand them together with light stitches, leaving one seam open. Fasten a piece of ribbon ten or twelve

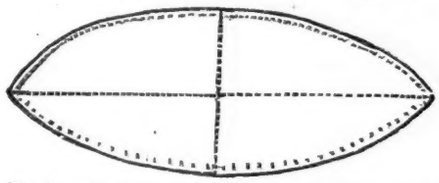


Fig. 1.—PATTERN FOR EGG-SHAPED WORK BASKET.

inches in length to each point of the basket to serve as a handle, and finish with ribbon rosettes. The basket opens readily by pressing the two ends together. If desired, the inner sides may be lined with silk, which should be of the same color as the ribbon. A basket of this kind makes a neat and safe receptacle for tatting, fine crochet, or similar work. Figure 2 shows the perspective view of the complete basket.

HOME RECIPES.

GREEN PEAS.—Simmer two quarts of shelled peas in a porcelain kettle in just enough water to keep them from burning. When they are tender, place the kettle at the back of the stove and move the cover slightly that the steam may escape. When the peas are nearly dry pour over them a pint of sweet cream, with a teaspoonful of salt, a little white pepper, a finely pulverized cracker, and a tablespoonful of granulated sugar. Let them come to a simmering heat, and they are ready to be served.

BAKED RHUBARB.—Peel and cut the stalks in inch lengths. Lay in a pudding dish, and to a quart of the pie-plant allow a cupful of sugar, half a cup of bread crumbs, and a cup of water. Bake in a quick oven until soft, adding more water if too dry.

BAKED HADDOCK.—Haddock is a cheap fish, but cooked properly it makes a very good family dinner. Put one ounce of dripping in a frying-pan, and fry in it, until yellow, a finely minced onion of medium size; add a cup of bread crumbs, salt, pepper, a tablespoonful of minced parsley, and a very little stock gravy or hot water to moisten it, and bind together. Stuff the fish with this, tie over it thin slices of fat pork, and bake until done, basting with melted butter.

CHERRY PUDDING.—Wash and stone the fruit; make a light paste with a quart of flour, half a cup of lard and butter mixed, and a saltspoonful of salt well rubbed together. Two heaping teaspoonfuls of baking powder should have been sifted through the flour, and when the butter is well rubbed in stir in two cups of milk, handling as little as may be now. Roll out about a quarter of an inch thick, and for the bottom round use the top of a quart pail for a cutter; spread this with fruit, leaving a margin of half an inch all around; sprinkle the fruit with sugar, and roll out a second sheet an inch less in diameter than the first; spread with fruit and sugar and cover with a smaller round; so continuing until the top round

Fig. 2.—PERSPECTIVE VIEW OF WORK BASKET.

is no larger in diameter than an ordinary dinner glass. Have ready a conical bag of stout muslin and draw it over the pyramid; tie under the bottom. The bag must first be wrung out of boiling water and floured inside. Boil two hours and eat with sweet sauce. Currants picked from their stems may be used instead of cherries.

BOYS' & GIRLS' COLUMNS.

LUKE SHARP'S QUARTER.

RICHARD H. ADAIR, W. VA.

THE summer sun was sinking grandly in the west. Already it had disappeared below the tops of the forest trees enclosing the small clearing in the midst of which stood Sam Sharp's log cabin. And there was Sam himself, contentedly smoking a short clay pipe and gazing with stolid indifference upon the beauties before him. There was to him more satisfaction to be obtained from tobacco than from the contemplation of the marvelous changes going on in the west. And yet had any one spoken to Sam about the wonders which he beheld though saw not, he would have drawled out, "Yes, them clouds do be mighty purty. But I tell you them'll bring rain. I've allers noticed when the sun sets like that we have rain. It's one of them old signs that never fail; you may depend on't," and then relapsing into silence he would solace himself with his pipe. A tow-headed boy of about fourteen was fishing in the creek which flowed but a short distance from the house. He did not seem to have much luck, and presently, after repeated throws and patient waitings, put up his line. The solitary fish which he had caught was contemptuously tossed back into the water, and he came slowly up the path to the house and stood before Mr. Sharp.

"Pap," he said, "I want to go to town to-morrow, as it's the Fourth of July. They're going to have fantastics an' a great many other things." The boy waited for a reply, but the father puffed composedly and without deigning to look at his son, who continued, "Bob Jenkins is agoing, an' so is the Sturm boys, an' Will Sturm is to be one of them." Still no reply from Mr. Sharp. "I haven't had a day in town for more'n a year an' I thought I'd like to go."

"Well go, Luke, ef you wants to, I reckon I kin spare ye." "Thanks." But still the boy did not seem satisfied, and stood shifting uneasily from one foot to the other, and at length continued:

"Pap, I've worked hard this season, an' I thought I ought to have some money, so's to have a good time." Mr. Sharp's face expressed surprise, and taking the pipe from his mouth he gave a long whistle. It was plain that he did not relish this idea. He thought his duty to his family was done when he had provided them with food and clothing. He had a horror of wasting money, and to spend it for anything except the absolute necessaries of life seemed to him wasteful. Like many short-sighted men he failed to apply the same rigid test to his own conduct that he did to that of his family, and his prodigal use of tobacco, wasteful alike of time and money, was not considered in the light of an extravagance. On the contrary, he had come to regard it as a necessity, and many small comforts were denied the household in order to furnish money for his favorite weed. Poor Luke might have been disappointed had not his mother, who heard the conversation, come to the door and put in a plea for him.

"I think you ought to let Luke have a little spendin' money, pap. He's earned it, and you might give him a quarter at least." Perhaps Sam had a twinge of conscience, for after awhile, when Luke had turned away to the barn, he said, "Well, mother, yer may be right, an' I don't say as I meant to say no to Luke; but I don't believe in incouragin' him to spend his money so keerlessly. He ought to know that money don't come so easy. Yes, I s'pose he's earned it."

"If he's earned it seems to me he ought to have it. Tain't often he gets a holiday, an' he can't have a good time without something to spend. You wouldn't like to go to town yourself without a cent in your pocket."

"That's so, mother, that's so." And they returned to their several occupations, the mother to the preparation of the evening meal and the father to his pipe.

Luke and his mother had gained their point, however, for early next morning the lad was hurrying towards town with a bright quarter of a dollar in his pocket. This seemed a great deal of money to him, and many times did he take it out and look at it, and scarcely once did he let it slip from his fingers in his pocket. He pictured to himself the many things he might buy with it. He had visions of soda-water, candy, peanuts, fire-crackers, pin-wheels, and all those things which delight the heart of a boy of fourteen. He resolved, however, not to spend his precious coin until he had looked carefully at all the shop windows and seen where he could do the best. Presently he came to the forks of the road and saw coming up the other branch or fork one of his schoolfellows, Bob Jenkins, and together they trudged on to town. It did not take long for the boys to exchange confidences and Luke soon knew that Bob was the happy possessor of fifty cents. Bob's dreams therefore were even more extravagant than his own. In due time the boys arrived at the town and began to inspect the show windows of the stores which were stretched along on either side of a single street. These shops were gay with the decorations in honor of the day and the goods were displayed in the most tempting manner, while the clerks were busy showing their wares to the country people, who in this section on gala days combine business with pleasure, buying and trading in the morning and spending the remainder of the day in jollification. Exploding fire-crackers kept up a noisy din in the street, while at every corner the boys were tempted to spend their money on wheels of fortune and various other games of chance. Bob inconsiderately invested ten cents in one of them and lost it. Luke was more prudent, and although he did not understand how wrong it was to risk money in that way he would not "try his luck," as the man who owned the game urged him to do.

"THE FANTASTICS ARE COMING."

Just then a great shout resounded on all sides. "The fantastics are coming!" and the people crowded into the main street to see

this to them very interesting spectacle, while old as well as young seemed highly amused with the funny procession of masked figures clad in odd and fantastic costumes which was just passing by, and which is considered the chief figure of a Fourth of July celebration in many of our country towns. Our hero and his companion enjoyed the fun hugely. They tried hard to discern Will Sturm in the throng, and when the last of the line had passed ran up a cross street in order that they might view the procession a second time. They had not gone far, however, when they came upon a little boy crying bitterly. The passers-by seemed not to notice him, but the boys stopped and asked him what was the matter. Between his sobs he managed to tell them that he was on his way to the bakery for bread when he tripped and fell, thereby losing his money. His mother told him it was every cent she had and he must not lose it, and now it was gone and he could not find it, and they could have no supper that night. The boys' hearts were touched and they began to search vigorously for the lost money, though they were afraid they would miss the procession by doing so. The search was in vain, however, and after a time they gave it up.

"How much did you loose?" asked Luke.

"Twenty-five cents," sobbed the boy, renewing his crying, which for the time he seemed to forget. Luke gave a start. That was just what he had. He put his hand hastily into his pocket. The quarter was still there. How smooth it felt! He drew it out. How bright it was! He looked at it a long time and then shutting his teeth hard slowly handed it to the boy. It cost him a hard struggle to do it. He so seldom had any money of his own and he had hoped for so much from this, and as the boy's small hand closed over the bright silver, Luke's beautiful visions of the morning vanished. Bob looked at him in amazement; he had thought because Luke would not spend his money that he was stingy. And now—but at that moment the head of the procession came into view and both boys ran off to see it. Many times during the day did Luke's hand slip into his pocket only to find it empty. He did not exactly regret giving his money away, but he came very near it, and wished that the little boy had not lost his. There are older folks who would not have done any better, perhaps not as well. As the boys went home that night Luke could not help wondering what his father would say when he understood what had become of his money. He knew that Mr. Sharp would not like it, and was not a little fearful lest he should be very angry. This proved to be the case, for his father said that he might just as well have thrown it into the fire, for all the good it did him. Luke did not reply, but as soon as he had gone from the table his mother defended him vigorously. Fathers sometimes make mistakes in regard to such matters, but mothers seldom do; for they seem to know the right from the wrong without much thinking about it.

"Luke's no fool, pap. If he wanted to give his money away to a little boy in trouble, instead of spending it for fire-crackers an' such, it seems to me there's no harm in that."

"Now, mother, you won't make no man of him if you learns him sich soft, girlish ways. Everybody that makes a pore mouth ain't deservin'."

"Soft, girlish ways, indeed! I never heard you say he don't work hard when he's in the field."

"So he does, so he does. But he'd ruther go to school any day than work, an' I don't think that's a very good sign."

"Well, pap, you an' me never had any learnin', but I don't see why Luke shouldn't have all he can get."

"'Cause 'twon't do him any good to have any more. He's got more'n I have now."

"I hope he'll be able to have a great deal more still," said the mother fervently.

"Wall, I don't see how he's agoin' to git it." And Mr. Sharp rose from the table. Luke always found a ready ally in his mother. Though she had had little education herself, yet she sympathized with him in his desire for knowledge, and encouraged him to persevere. It pleased her when his teachers commended him for his studious habits and aptitude for learning. The summer that followed passed slowly to Luke. His heart was not in the farm work, for although he always did his share well, the thought, almost certainty, that he could not attend school in the fall made his labor burdensome. One morning in September, Bob Jenkins came to the house bringing with him a copy of the county paper, which he said his father sent over for them to read, and he pointed to a marked paragraph which Luke first read to himself and afterwards aloud to the family. It ran as follows:

"*Wanted.*—To know the whereabouts or address of the boy who on July the fourth last, in this city, on Federal Street, gave a little boy a quarter in place of one he had lost. Call on or address John Binghem, 414 Main Street, Jackson."

There was no doubt that Luke was the boy meant in the advertisement. But what could he be wanted for? There were many conjectures, but of course they were mere guesses. Mr. Sharp was suspicious, though if Luke could get his money back it might be well to answer the advertisement. It was finally decided that Luke and Mrs. Sharp should take a trip to town to see this Mr. Binghem. So, early the next morning they stood in front of a neat residence on the Main Street of Jackson. To them it appeared almost magnificent, and they hesitated long before going in. Mustering up courage, however, they finally ascended the steps and rang the bell. A lady opened the door.

"Is this where Mr. Binghem lives?" asked Mrs. Sharp.

"Yes. Come in, won't you?" and they were shown into a room that seemed very beautiful to them.

"Is Mr. Binghem the one that advertised for a boy who gave another boy some money?"

"Yes; and is this the lad?" asked the lady, and without waiting for a reply she walked up to Luke, and taking both his hands in hers continued: "God bless you. I owe you a debt of gratitude which I may not be able to repay, but it is some satisfaction to see you and thank you for your unselfish deed." Then turning again to Mrs. Sharp she inquired her name and introduced herself as Mr. Binghem's sister. She had been left a widow with one child—the boy whom Luke had befriended—and in straightened circumstances. The money which her boy had lost was the last that she possessed, and but for Luke's kindness they might have suffered for food.

"My brother arrived a few days afterward and found me destitute. He had been in California for many years and just happened to come back." At that time Mr. Binghem entered. After the explanations he said to Mrs. Sharp:

"When my sister told me of the noble deed of your son, it seemed to me that a boy who could do that must be honest and would be worth doing something for. I advertised for him at once, but had begun to despair. Now, ma'am, to come to the point, I want your boy to go in my store."

"I'm afraid he hasn't enough education, sir," said Luke's mother, rather sadly.

"As to that, there is a night school here where he may learn. In case you accept my offer I do not intend that he shall work constantly in the store, but will agree to give him a good education." Mrs. Sharp's face lighted up, and in Luke's eyes there glowed a new fire, while Mr. Binghem felt that he was richly compensated by what he saw expressed in their countenances.

"Oh, sir!" and Mrs. Sharp's voice trembled as she said it, "Luke don't think about anything but studying and books; but he's never had much chance, an' I was afraid he'd never have any, an' now if you will do that for him I'll be so thankful." And the poor woman, overcome by her emotions, fairly sobbed for joy. Before leaving, Mrs. Sharp had arranged everything with Mr. Binghem so that Luke might report for duty the first of October, and though Mr. Sharp demurred at first at the thought of letting Luke leave the farm, after several conferences with Mr. Binghem he at last consented.

Since then four years have passed. Luke has fulfilled all the expectations of his employer, and, in his integrity and faithfulness to business, gives still greater promise for the future. He looks back to that Fourth of July and recognizes that his small act of kindness changed his whole life, and gave him a calling which is more congenial to him than farming would have been. I do not wish my young readers to think that farming is not just as honorable and as pleasant an occupation as any other in the world, but Luke's tastes demanded something different; and though he would have made a good farmer he makes a much better merchant. I wish that all boys might feel as forcibly as Luke now does how much of our success depends upon apparently trivial incidents.

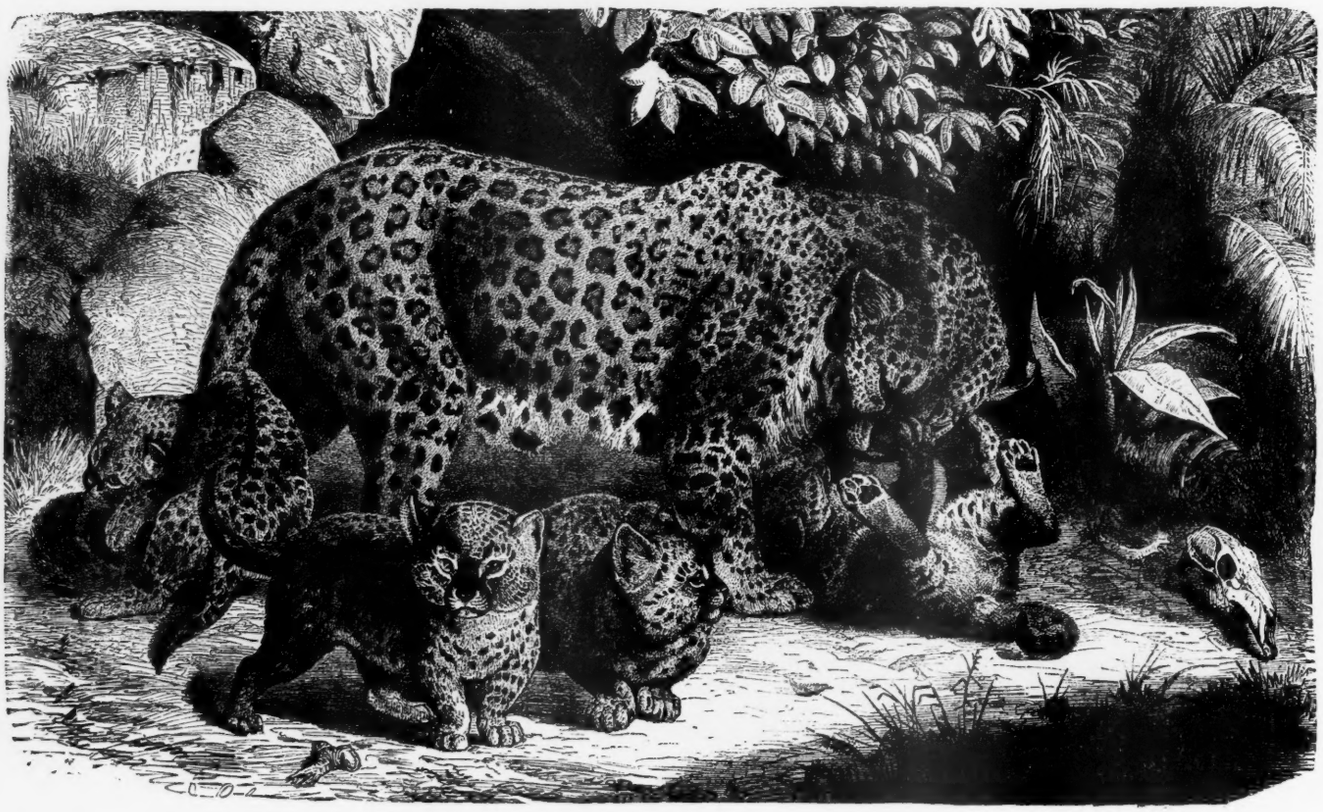
Word Squares.—The word square (or "square word") is an arrangement of several words of equal length in the form of a square in such a way that each word will be spelt twice over. This is explained by the following example:

A P E	A P E	A P E
P	P E A	P E A
E	E A	E A T

Each of the three words, *ape*, *pea*, *eat*, appears twice over, reading across once and down once. In the above example, the puzzle can be given as follows: "1. An animal; 2. A vegetable; 3. What we all do." As there are three words given, it will be known that each word contains three letters. Any number of letters may be used.

A FAMILY OF KITTENS.

One part of New York's Central Park is thronged with children on Saturdays and during the summer vacation. It is the corner where the animals are kept. The deer-park, where the spotted fawns gaze timidly through the wire netting at their visitors, or venture to take clover from their hands; the tank where huge sea-lions tumble around in the water, while long-legged cranes and solemn pelicans stand looking on stolidly; the herds of elephants and camels, which quietly munch their hay; the monkey house and bird cages, are never-ending points of interest. Among the other features is a long low building, in which are strong cages of lions, tigers, and other animals of the cat family. The girls and boys, as they watch the huge beasts from a safe distance, find it hard to believe them as truly cats as are their own purring pets at home, but they are though. One of the most beautiful of this great family is the leopard, of which our picture shows a group of young with their mother, in their native forest. The spotted kittens, each one larger



UNDESIRABLE HOUSEHOLD PETS.

than a full-grown house cat, are as full of fun and frolic as any fluffy little pets that tumble on a parlor rug, and the mother leopard is as tender and proud of her babies as any Maltese tabby. Leopards are natives of India and Africa. They lurk in the branches of trees, from which they spring upon their prey. But fierce and savage as they are in a state of nature, leopards are easily tamed if taken young. History tells of tame leopards kept by Eastern princes hundreds of years ago, and Tennyson, in his poem of "The Princess," represents her as seated

"With two tame leopards crouched beside her throne."

They are not very safe pets though, and many stories are told of narrow escapes or worse, in cases where the savage nature of tame leopards has been aroused by a blow or the taste of blood. A man in France who had tamed an ocelot, which is a South American member of the cat family, gave it the freedom of the house. One evening when its master's little girl was playing with it the animal became angry, and seizing the child by the throat killed it before help could come. Leopards are better in their native forests than as household pets.

Fishing for Mother-of-Pearl.—Twice a year the fishers set off for the coral reefs in the Red Sea. A fleet consists of about three hundred open boats of from eight to twenty tons burden and with a single lateen sail in each. The crews consist almost entirely of black slaves, who receive two-thirds of the "catch," while the other third goes to the owners of the boats. When the sea is calm the fishers anchor the boats near the coral reefs, and going out in canoes to the fishing-grounds, dive for the shells. These slaves are of all ages from ten to forty years, and are remarkably strong and healthy. The mother-of-pearl shells are sold at auction in the markets of Jeddah, and from there sent to London and Havre.

A NATURAL BEE-HIVE.

CYRIL MARR, CAL.

Since the discovery of gold in California, which first entitled the State to assume the title "El Dorado," attention has been directed, from time to time, to the discovery of new wonders in Nature heretofore unknown. But while the guide books put all of these in the route of the sight-seeing traveler, it remains for the resident of the remote districts to know of some of the grandest, if not the most beautiful, things in the catalogue. One of the most pleasing was beheld, some years ago, by the writer, while on a visit to a sparsely settled section of the Coast Range Mountains. It has only a local reputation, but is none the less interesting. It is known as "Bee-Rock." Having once heard of the wonder, a visit was positively determined upon. The rock is in the side of a gorge near the summit of the range, and stands so that access to its summit may easily be had from the mountain side, but presents a perpendicular face to the bottom of the cañon. The face is broken by a vertical fissure of several inches, and this fissure is intersected by numerous smaller crevices. In this retreat many swarms of wild bees have taken refuge, and most industriously carried on the labor which Nature has assigned them. It would be impossible to estimate, with any degree of certainty, the amount of honey thus stored away. Many attempts at "robbing" have been made, with some success, the bee-hunters managing to carry away hundreds of pounds; but owing to the almost impregnable home of the little workers, only a small part of their store has been molested. The only possible way of reaching a favorable position is by being suspended from the summit by a rope, after the plan of "cliff-robbers;" and as the hunter is at a disadvantage both as regards offense and defense, he is generally satisfied with partial success. This is probably one of the largest natural apiaries on the Western Continent, but it is impossible to estimate the number of swarms, or the length of time it has been inhabited.

THE DOCTOR'S TALKS.

In nearly all parts of the United States, at least those parts which my young friends are likely to inhabit, you will find

BUTTERCUPS AND THE BUTTERCUP'S COUSINS.

The majority of these cousins of the Buttercup bloom very early in the season, and are, by this time, out of flower. We will notice some of these briefly, trusting that we may give them a closer examination next spring. In the woods, especially in northern localities, is found one of the very earliest of spring flowers, which you will probably be told is the "Liverwort." This is, however, a very incorrect name, which belongs to a family of "Flowerless Plants." The correct name for this is

"LIVER-LEAF", or *Hepatica.*

As these flowers everywhere, save perhaps very far northward, have long ago disappeared, I give an engraving (fig. 1), to remind you of their appearance. If you go into the woods the first bright day in spring you will be quite likely to find its light, bright blue flowers struggling up among the dry leaves, or sometimes in sunny spots, appearing even

Fig. 1.—LIVER-LEAF.

before the snow has left the ground. The flowers are singly, upon the tops of stems four to six inches high. If you search down you will find the leaves of last year, which have lasted over the winter. Later in the season, after the flowers have fallen, if you visit the plant again, you will find the new leaves, which with the flower-stalks are furnished with silky hairs. The leaves are heart-shaped, with three broad lobes, and purplish on the under surface. The flowers are likely to puzzle a beginner. There are no petals. What appears like a corolla is a petal-like (*petaloid*) calyx, while that which appears like a calyx of three sepals is an *involucre* of three small entire leaves placed just below the flower. The flowers, usually blue, are sometimes violet, purple, crimson, or almost white. The botanical name, *Hepatica*, is from the Greek word for the liver. In ancient times it was thought that a plant, or some part of it, indicated by its shape the disease it would cure. The leaf of this plant, being supposed to resemble the liver in shape, was at one time given for liver complaints. It is now regarded as having very little if any medicinal activity. The stamens in the flower are numerous, and the pistils, as shown in the right-hand flower, are several in a cluster in the center of the flower; they ripen into one-seeded pods or *achenes.* There are two *Hepaticas*, differing much in the form of their leaves; one, by far the most common, has the lobes of its leaves very blunt, this is *Hepatica triloba;* the other has the lobes pointed (*acute*) as in the engraving, and is *H. acutiloba* of most botanists, though some consider it as only a variety of the foregoing. You are aware that many flowers in cultivation have the number of parts greatly increased and are called "double." The Rose is an example. All the wild Roses are single and have but five petals. By long cultivation the number of petals has been so much increased that we can hardly count them, as may be seen in any good garden Rose. This is accomplished in several ways, which we cannot now discuss; sufficient to say that in double flowers the number of petals or sepals is greatly increased. There are in cultivation double Hepaticas of numerous colors, and most charming flowers they are, though not very lasting.

THE WILD COLUMBINE.

Probably every boy or girl who has seen the Columbine on the rocky hill-sides in May, has been so struck with its grace and beauty as to inquire its name. When told that this too is a cousin of the Buttercup, the relationship at first sight may not be very plain, but with this, as with many other plants, we must examine closely if we would know about them and how they are related. An engraving to show the real beauty of the plant would take up too much room, so I give only those portions which show its kinship to the Buttercup. Figure 2 shows a flower of the natural size, and gives its graceful manner of drooping. The sepals and petals are much unlike in size and shape. A detached sepal is shown in figure 3, and a separate petal in figure 4, both of the natural size.

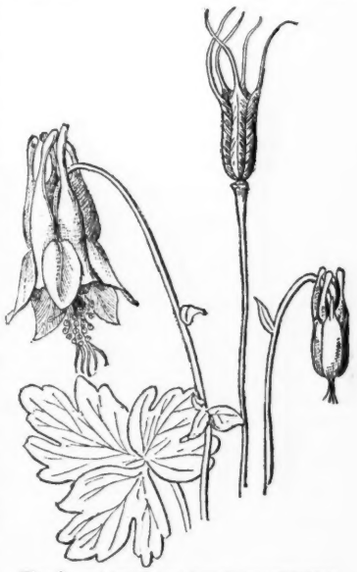


Fig. 2.—FLOWER OF WILD COLUMBINE.

The sepals here are petal-like in texture and are colored alike. The petal has its edges united to form a spur, which is expanded and free above. The older botanists called such spurs *nectaries.* In the Columbine these spurs do contain nectar. The stamens are numerous, some of them abortive. Pistils are from nine to thirty, in a whorl at the top of the receptacle. The ovary is cylindrical, with many ovules (figure 5), ripening into a many-seeded follicle (figure 6). Of late years, there have been discovered in the far west, Texas, Rocky Mountains, etc., species with spurs of great length. One of these has spurs four inches or more in length. The species known as "The Rocky Mountain Columbine" (*Aquilegia cœrulea*), one of the most beautiful of all, has very long spurs. I had it growing at one time in my garden, and was much amused at the sagacity of the bees in getting honey from its long spurs. The bee could not hope to reach the nectar through the natural opening or mouth of the spur with its short tongue, whereupon the sagacious insect cut an opening in the side of the spur towards the bottom, through which it reached the store of sweets without difficulty.

"Uncle Sam."—The name "Uncle Sam," as applied to the United States, arose from a joke perpetrated during our last war with England, and grew out of the letters E. A., U. S., marked upon some barrels of army provisions put up at Troy by a contractor called Elbert Anderson, the initials standing for his name, and U. S. for the United States. It chanced that these provisions were inspected by one Samuel Wilson, whom his men were in the habit of familiarly calling "Uncle Sam," and one of these workmen, on being asked the meaning of the letters E. A. and U. S. on the barrel heads, jocularly replied, "Why, Elbert Anderson and Uncle Sam (Wilson), of course." This joke was passed merrily round among the boys, and when soon after some of them went to the frontier and were served there with rations from the very provisions they had helped to pack and mark, they still called it "Uncle Sam." All the rest of the army appointments also bore the letters U. S., and thus "Uncle Sam" became a popular term for everything that belonged to the United States and finally for the United States itself.

Fig. 3. Fig. 4. Fig. 5. Fig. 6.

THE IMPROVEMENT OF THE SIGNAL SERVICE.

BRIG.-GEN. A. W. GREELY, CHIEF SIGNAL OFFICER.

The advisability of transferring the Weather Bureau from the army to a new executive department, known as the Department of Agriculture, is a question of policy, and so need not be discussed. As to the methods pursued, there can be, it is believed, no question as to the fact that they are entirely unsatisfactory, and not in keeping with public opinion. Under existing conditions in the military service, it is necessary that every subordinate should be morally, physically and mentally qualified to perform the duties of his position. Medical examinations by officers of high standing insure perfect physical health, while mental capacity, determined by an examination made solely on subjects connected with the observer's work and duty, is always assured.

The section of the bill transferring the Weather Bureau to the Agricultural Department makes no provisions for the mental or physical examination of the observers, and contains no provisions which insure a man his position. The effect of this transfer will necessarily place the positions of observers and assistant observers, at the various stations throughout the country, in the same class as the positions of postmasters at minor offices and of the unclassified service throughout the country. Every change of political administration necessarily means the displacement of observers and assistants, which in most cases would follow immediately, since the observers have no tenure of office and are not appointed for any particular time. This, too, is a question of policy, which may commend itself or not, as the case may be; but there is no reasonable doubt that such an uncertain tenure of office, and such frequent changes of the personnel, would materially diminish the efficiency of the observers throughout the country. At present there are four hundred and fifty men in the service. Nearly one-half have served ten years or more, and are certain of being continued in office during good behavior and efficient work.

The section is objectionable further, in that it transfers to a purely civil bureau fourteen officers of the army, with the direct proviso that their commissions shall not be affected, which is a radical departure in legislation, since these officers would hold positions for life, being no longer subject to trial or dismissal for any misconduct, however grave. Even if this provision for giving a life tenure of office to a new class of civilian employes should commend itself, yet the public has a right to demand that these officers should at least be efficient and able. Some of them are valuable officers, others not entirely suited to this class of work, while still a third class are entirely unfit to hold their present commissions, which were granted them without examination, or, in other cases, on examinations which covered many subjects, but not one word of physics, the fundamental basis of scientific work.

A further effect in this transfer is the fact that it takes away every officer and man from the Signal Corps proper, and leaves the military telegraph lines, and other strictly military duty, to be provided for in other ways and at an increased expense, involving the necessity of a new estimate of sixty-five thousand dollars for the maintenance and repair of the said lines the coming year.

There is no doubt that the Weather Bureau should be reorganized; but after having gone eighteen years without reorganization, this proposition is to the effect that it shall continue in an unsatisfactory manner until Congress shall have time to legislate. The Chief Signal Officer, believing in the necessity of a reorganization and a more efficient service, has strongly recommended, with a fair prospect of success, the making of the force in Washington which performs clerical duty a civilian force; a plan which commends itself to every one, and which makes the bureau a mixed one—partly civil and partly military. Further steps have been taken to reorganize the military part, and a proposition put forth by the Chief Signal Officer looks to the reduction of the higher and unnecessary officers of the service by ten and the number of men by fifty, and the decrease of the annual legal charges against this bureau of a sum over a hundred thousand dollars.

This briefly outlines the facts in the case, which can be gainsaid by no one: On one hand a civil bureau without organization or increased efficiency, subject to political appointments, at an increase of above fifty thousand dollars annually over the present bureau; on the other hand, a reorganization, partly military, partly civil, which will certainly increase the efficiency of the service, and will reduce the annual outlay nearly one-eighth of a million dollars. Between these two lies the sum of nearly two hundred thousand dollars annually; it is for Congress to say whether or not it shall be spent for the mere making of a military bureau a civil one.

The farmers and agricultural interests can expect no improvement in this service save by improved methods and superior work, and such can only come by reorganizing the bureau and insisting that ability and efficiency of the highest order are devoted to the development of practical and especially agricultural meteorology. No advocate of the transfer has ventured to say how or to what extent this bureau will further aid agriculture—a significant omission.

HINTS ON HAY MAKING.

In this number of the AMERICAN AGRICULTURIST an "Old Farmer" says truly that "before it is wilted, even a heavy, drenching rain will not hurt the grass." We all know that this is the case while the grass or clover is growing. If you dip a freshly-plucked clover blossom in water it is still sweet, but a dried clover blossom will soon lose its sugar in water. The growing or fresh blossom is covered with a thin coat of varnish which sheds the rain or water, but when the grass is partly or wholly dried, this coat of varnish cracks and admits the water. This is one of the most important points in hay making.

A shower while the grass is growing does not hurt it in the least, and after it is cut, as long as it remains fresh and full of sap, rain will not dissolve out the sugar and other soluble matter. It is for this reason that some good farmers commence to cut grass in the afternoon and keep on cutting as long as they can see. During the night dew or rain will not injure this fresh grass, while had it been cut early in the morning and exposed to the hot sun the same amount of dew or rain would have done more or less damage. There is another reason for cutting in the late afternoon and evening rather than in the morning. During the day an acre of grass evaporates several thousand gallons of water. On a bright, sunshiny day the leaves evaporate water faster than the roots can pump it up out of the soil, but during the night evaporation partially ceases, and as the roots keep pumping up the water the plants contain much more water in the morning than in the evening.

Another point to be observed in making hay is this: Water that is inside the plant is far less injurious than water outside the plant. The reason for this is that the sap contains sugar and other soluble matter, while the water on the outside of the plant does not. Hence it follows that after hay has been exposed to rain or dew it is necessary to cure it more completely, or to dry it more thoroughly, than grass which has "been cured without a shower." Experienced farmers understand this, but some of our younger readers may thank us for the hint. Hay that has been exposed to rain is often improved by sprinkling a couple of quarts of salt to each ton while putting it in the barn or stack. Spread the hay out in layers not over a foot thick, and scatter the salt evenly over each layer. The salt is dissolved by the moisture (not sap) of the hay, and helps to preserve it from injurious fermentation. There are a dozen different methods of making hay, but they can all be divided into one of two classes: the slow method or the quick method.

Since the introduction of modern machinery the general rule is to "make hay while the sun shines," to "go ahead," and "push things." There are not a few good farmers, however, who still say "it is better to have hay spoil in the field than in the barn," and they like to cure it more in the cock and less in the sun. Both methods have their drawbacks and their advantages. As "Old Farmer" says in this number of the AMERICAN AGRICULTURIST, "When we once get hay into a well-made cock it is comparatively safe." This is true, but those who adopt the quick method of curing seldom spend much time in cocking. This is the weak spot in their system. "Old Farmer" says you should "turn your fork," and the advice is good. What he means is this; many men in cocking hay merely push the hay into bunches or lift it on top without turning the fork. A good cock cannot be made in this way. When you have a forkful of hay lift it up and while in the air turn the fork over and let it come down firm on the cock, with the ends of the steel fork pointing towards the ground. When the cock is made, trim up the bottom and sides so that the hay will lie straight and pointing towards the ground. Put the hay that you trim off from the bottom and sides on top, but in doing so always "turn your fork."

In pitching on to the wagon it is hardly necessary to remark that you should always turn your fork. It is no harder for you and much easier for the loader. Remember another thing. It often takes longer to start the horses than it takes to pitch on the cock. A good pitcher will sometimes pitch on a cock without letting the wagon stop at all! Of course he cannot keep up such active work long, but much time is lost while waiting for a team to start. A lively pitcher will call out "get up" before he has gathered the last forkful.

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Notes on the June Number of the American Agriculturist.

BY AN "OLD FARMER."

"Have you a set of Hay Caps?"—With a mowing machine, tedder and rake, grass can be cured so rapidly in our dry climate that we ought to be able to make the best of hay. Before it is wilted, even a heavy, drenching rain does not hurt the grass; and when we once get it into a well-made cock it is comparatively safe. The trouble is that few farmers take the necessary pains to make a good cock. The great secret of making them so that they will shed rain is to "turn your fork."

"Supplementing Pastures."—An important matter. Practically the best way is not to overstock.

"Value of Fertilizers."—I suppose the next generation of farmers will appreciate the difference between "nitric-nitrogen," and "organic-nitrogen," and "ammonia-nitrogen," and there are so many good, practical articles in the AMERICAN AGRICULTURIST which we can understand and appreciate, that it is probably well occasionally to print one that is fresh to us old farmers. I have rarely used commercial fertilizers that did not pay a big profit. And by paying cash and clubbing with our neighbors we can buy at reduced rates.

"What to do with the Runts."—I do not like the idea of killing the weak pigs. Better give them away. When I was younger I kept pure-bred hogs and sold them for breeders. My man "Fred" got married, and one day I said to him, "Here, Fred, is a little pig I am ashamed to have seen. You can have him if you want him." He took him home and washed him. His wife cooked small potatoes for him, and cut grass from the side of the road, and bought a little meal to add to the slops from the house. In four or five months a visitor came to buy pigs. He could not find one that suited him. As he was going away, Fred said to him, "I have a sow that is pure-bred that I will sell cheap." He appealed to me and I told him the pig was as pure-bred as mine. And Fred sold him the sow for $40. This is a fact. So much for care, separation and good feeding.

"Eggs at Two Cents per Dozen."—It is a capital plan to pay the children for hunting eggs. Help them all you can. Tell them where they will find a nest full of eggs, but never gather them yourself, and above all *pay promptly*—or at any rate as soon as you sell any eggs. I knew a farmer who gave his wife a calf. She raised it and fed it herself. One day a man offered him a good price for half a dozen young heifers, and he sold them, including the one his wife had fed and petted, and he put the money in his pocket.

"Water for Hogs."—Drill your well into the rock. Put in a force pump and plug up the drill hole so that no surface water can get into the hole, and you are safe. On most farms a wind-mill will pay for itself in a year.

"The Rabbit War in Australasia."—I have an English neighbor who wants to import some wild English rabbits and "rooks." The rabbits burrow and are thus better able to protect themselves than our rabbits and hares. The "rooks" are common all over Europe, but are unknown in America. They resemble crows, but when young are good to eat. Neither the rabbits nor the rooks are "game" in England, but the killing of them affords much pleasure for those who like shooting. I showed him Mr. Dewey's article, and he said, "Oh, yes, in a sparsely populated country the rabbits would soon become a nuisance, but here the boys would hold them in check and have lots of sport."

"Care of the Asparagus Bed."—A good article this, and should be read again. "No garden should be without an asparagus bed." That is so, and let it be a big bed—not less than three hundred roots, set a yard apart. This would require the sixteenth part of an acre, and it is no more work to plant it and take care of it than to plant potatoes. Better set five hundred roots when you are about it, and then you will not be in much danger of cutting it too closely.

"Hackney Horses."—Charming pictures those on pages 238 and 239. I catch myself looking at them again and again.

"Hints on Shoeing."—Good and to the point, and much needed. Read them again and act upon them.

"Duty on Wheat."—I had no idea that France, Italy, Spain, Sweden, Norway, Austria, Hungary and Germany taxed our wheat so heavily.

"The Advertisements."—Don't get mad when I tell you that to me the advertisements in the AMERICAN AGRICULTURIST are as interesting as any other matter in the paper. Let us have more of them—even if they are what they call "Proprietary Articles" or "Railroad Advertisements;" provided they are accompanied with attractive looking pictures.

Kitchen and Market Garden in July.

The next year's yield of asparagus will depend upon the treatment of the bed this year. Do not cut too late, and do not allow the tops to be cut to any extent to use as "fly catchers." Every stem cut away now weakens the yield of next year. If seeds were sown to raise plants for setting out next spring, keep the seed bed clear of weeds, and pull out any poor, weak seedlings.....Sow beets, of the early kinds, mainly for use as greens. ....Sow successive crops of dwarf beans....If the Lima beans will not take to the poles, give them help...Cabbages and cauliflowers of the late kinds should be set out as soon as the plants are large enough.....Plant celery, making manured rows, three feet apart; plow out furrows at this distance, manure well with fine manure, and turn the soil back upon it. Roll and harrow to make a fine level surface, and set the plants six inches apart over the manure....Sweet corn of early kinds may still be planted....Cucumbers may be sown for pickles. ....Onions, if near a market, are most profitable if sold when about half grown; wash and remove dead skins and with the tops remaining make into bunches of three to six, according to size..... Squash vines of the late kinds should be allowed to root at the joints. The disgusting squash-bug is kept in control by killing the eggs, which are laid on the under sides of the leaves. The late kinds which set too late to ripen may be used for the table; no matter how young, they are superior to the bush sorts.....Tomato vines, if a trellis is not used, should be kept from the ground by laying down brush. If the "rot" appears, in the shape of dark spots upon the fruit, gather and burn when first noticed.....Turnips, of the rutabaga sorts, should be sown early this month. The "Long White French" is by far the best for table use.....Weeds will grow where nothing else occupies the soil. Where an early crop is removed, and another is not needed, then sow rye, to afford a bite for the cow, or to be turned under as a green manure. Every foot of the garden should be occupied with some crop.

Orchard and Fruit Garden in July.

Should there be a severe drouth this summer, fruit trees, shrubs and vines that were planted last spring may suffer greatly, and it will be wise to mulch them even before there is any indication that it is needed. A mulch is any substance placed upon the soil to prevent it from becoming heated and to prevent evaporation of moisture from its surface, and whatever material will do this may be used; salt hay is much used near the coast, and marsh or swale hay is used inland. Straw and cornstalks are often used, as are chips, and even small stones. A layer of dry earth upon the surface acts as a mulch, and where this may be secured by frequent stirring of the soil it is one of the cheapest. ....Early apples and pears, if of good varieties, bring good prices, but do not transport to great distances. It will pay to thin the fruit of these, and when packing for market to assort carefully..... Pear blight usually attacks the trees without apparent warning. Cutting out the affected part and burning is the only remedy.....Thinning out the fruit to one-half or two-thirds of the amount set is often a profitable operation. This promises to be an abundant year for peaches, and in such years only the finest fruit brings good prices. Peach growers should thin severely soon after the fruit is set.....If leaves on pear trees turn brown it is probably due to the red spider, a minute red but more often brown creature on the underside of the leaf. Syringe with strong soft-soap suds, mixing a little kerosene with the soap before adding the water.....Cut out old raspberry canes when the fruit is gathered.....Sulphur the grape vines as soon as there are signs of mildew.

They Have Confidence in the Advertisements.

ARAPAHOE CO., COL., May 14, 1888.

I received those gold watches all right. We were very much pleased with them. We have been subscribers to the AMERICAN AGRICULTURIST for nearly forty years, and have no hesitation in sending for anything we see advertised in that paper.

E. P. HORNE.

HARRISON CO., MISS., May 13, 1888.

I beg to acknowledge the receipt of the Field Glass. I am delighted with the glass and thank you kindly for so good a one; more than I expected. You will not lose by your square and prompt dealing. W. C. HOWARD.

KANE CO., ILL., May 15, 1888.

Inclosed please find express order. Send watch No. 51 in Supplement. I sent for one of these six weeks ago, and it proves to be satisfactory and cheap. Now want one for the other hired man. I also sent at Christmas for No. 55, and that is a beauty and cheap, besides being a good watch.

S. R. PLUMMER.

Monthly Crop Report.

WASHINGTON, June 12.—The following is the crop report issued by the Department of Agriculture:

"There was some reduction in seeding the winter wheat area in some States, though the average breadth of all was but slightly reduced. In the East and South there was no material loss of area from freezing, but in several Western States it was considerable. The apparent reduction of breadth of winter wheat, as compared with that of last year, is about one and three-fourths millions of acres. The percentage of reduction for the entire winter wheat region is placed at 7.2 per cent. It is 18 in Illinois, 14 in Ohio, 10 in Michigan, and 9 in Indiana. There has been an increase of area of spring wheat in Dakota and further west, but a decrease in Iowa, Wisconsin, and Minnesota, making an average decrease for the spring wheat region of 1 per cent. The area in wheat is apparently slightly below 36,000,000 acres. There is slight local change of condition of winter wheat, making the average 73.3, against 73.1 in May. The loss by overflow of the Mississippi in Illinois offsets in part improvement in other counties. In Ohio, Indiana, Michigan, and Kansas the average condition is nearly the same as in May.

"The acreage of barley is nearly the same as last year. New York and Wisconsin are credited with an increase of 1 per cent, Minnesota with 2, Dakota with 10. Iowa, Missouri, and California report a small reduction. Condition of barley averages 88.8. It is only 80 in California.

"The area of rye is practically the same as last year. Condition 93.9."

"The area of cotton appears to have increased in every State except Florida. This preliminary survey of acreage makes the increase 2.2 per cent, and brings the aggregate breadth close to nineteen millions. The State averages are: Virginia 105, North Carolina 100.5, South Carolina 101.5, Georgia 101, Florida 99, Alabama 101.5, Mississippi 101.7, Louisiana 102, Texas 105, Arkansas 102, Tenn. 103.

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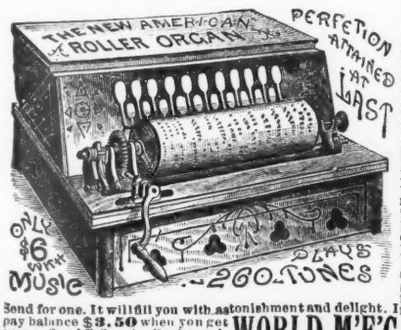

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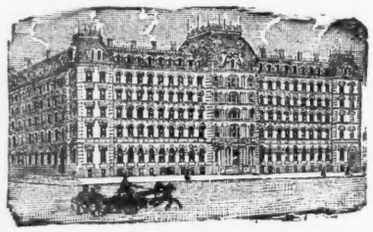

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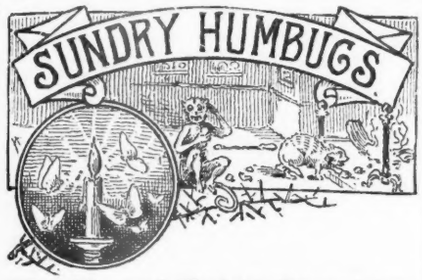

"Double and Twist" Electricity.

E. M. B., of Dedham, writes us that the "AMERICAN AGRICULTURIST is a library in itself," and then calls attention to a circular in regard to an electric ring, which is to be procured for two dollars, and which cures all the ills to which flesh is heir, and a good many besides. He considers it one of the multitude of queer remedies of this kind for which so much is claimed in these days. He says "a short time ago one had only to wear a battery suspended around the neck to live forever, and during that period of continuous existence be free from pains and troubles of every description. Now we are asked to wear a piece of steel on our fingers to derive from it the same benefits. At this rate wonders will never cease. Probably we shall soon be armed with portable electricity. There may be electric stations on the streets into which we can drop a nickel, and get enough electricity to last the rest of the day. Possibly my brains are too dense to take it all in, but there is one thing I do think, and that is you get an awful small quantity of electricity for your money. Truly it must be the double and twist and dyed-in-the-wool variety."

"Peroxide of Silicates."

This is the odd name of a compound that has been very extensively advertised this season, even in apparently reputable papers, as a bug destroyer, fertilizer, and insecticide. This peroxide of silicates is said to have been invented "by a well-known agricultural chemist, after many experiments and years of careful study and research," and is advertised by a company of similar name located in New York City. The retail price of peroxide of silicates is five cents per pound, and it is quoted in ton lots at from $55 to $60 per ton. A sample of this so-called peroxide of silicates was purchased in the open market and another sample was received direct from the manufacturers. Both were sent to the Connecticut Agricultural Experiment Station, at New Haven, for analysis. The Vice-Director, Dr. E. H. Jenkins, reports: "The two samples are essentially alike in composition. The material contains little or no 'silicates' or 'peroxides.' It contains about 86 per cent of plaster of Paris (burned gypsum), 2 per cent of arsenious acid (partly or wholly in the form of Paris green), and about 4 per cent of sand and other matters insoluble in acid, together with a little carbonate of lime, iron, and organic matter not separately determined. Its fertilizing value depends wholly on the plaster. The arsenic present is sufficient to justify the claim that it is a good insecticide. Possibly the use of plaster of Paris instead of land plaster may make it adhere more firmly to the foliage," but Dr. Jenkins thinks this may be of doubtful advantage. On the other hand, the company print several testimonials from parties who speak particularly of the effectiveness with which this mixture sticks to the plant. Now, instead of paying any such exorbitant price for this idiotically named peroxide, let farmers mix three pounds of Paris green with one hundred pounds of powdered plaster of Paris, and dust it on their plants. This mixture will probably be as efficacious as the so-called peroxide, and very much cheaper.

As for the "well-known agricultural chemist," who invented this peroxide of silicates, it is probably H. M. Pollard, who is put down as the president and chemist of the company. One H. M. Pollard has an unenviable record, and we are not informed that this is another party of the same name. The H. M. Pollard to whom we refer first comes to notice on November 22, 1874, when he was sentenced to the Rhode Island state prison for two years for inciting perjury. After serving his sentence, he removed to New Haven, where he sold "Pollard's Improved Fertilizers" for $32 a ton, which were made out of harbor mud with a little ashes added, and their actual value was only $1 a ton. Upon being exposed there, Pollard emigrated to Springfield, Mass., in September, 1877, where he professed to analyze soils by smell and taste, as well as by chemicals carried in his pockets. He thus pretended to discover what was lacking in their composition or what was needed to be supplied, in order to remedy their deficiencies. This done, he wrote on the spot the prescriptions suited to each field or crop, or undertook to compound a fertilizer suited to the case. He operated extensively in this way, charging fifty cents per acre for advice. He left Springfield, October 12, 1877, without paying his board, for which he was arrested and committed to the Springfield jail for thirty days. He was re-arrested November 17, upon the expiration of his term, for obtaining money under false pretence in taking fees for pretended analyses of soils, was held for the grand jury, and on January 10, 1878, was sentenced to two years in the house of correction. Upon his release in January, 1880, he invented "Pollard's Concentrated Privy Guano," which was alleged to analyze worth $130 a ton and to cost only $13.50 a ton. Rights to make this stuff were sold in Pennsylvania at $500 per county. Whether he spent the whole of 1881 and 1882 in this lucrative employment we don't know. But we next find him in Rhode Island in 1884, selling "Pollard's Special Fertilizers" at $50 per ton, or about twice as much as they analyzed to be worth. The fraud being exposed at that time by the local press, Pollard disappeared from view and subsequently was reported to have been drowned in the East River.

"Green Goods" and a Prison.

We have letters from W. E. E., Monica, Ill.; J. T. McV., Prole, Ia.; and W. O. R., Humboldt, Ia., containing circulars for green goods. The senders of these circulars give their addresses as follow: K. D. Ellis, 116 Third Avenue, N. F. Gorman, 110 Third Avenue, and George Upton, 127 Mulberry Street, New York. Many of the circulars sent to us by our friends in other States of the Union contain addresses in Hoboken or Jersey City. The circulars are so much alike in appearance and style that they seem to emanate from the same source. One of these swindlers was arrested a short time since in New York, was tried in a criminal court about the middle of May, was convicted by the jury, and received a punishment meted out by law, which is from one to six years in State's prison, or a fine of from one hundred to twenty thousand dollars. The man's name as given in the newspapers was Henry "Mac," alias Henry McMahon, and it is stated that his conviction was the first of the kind ever obtained in New York. "Mac" is represented as a red faced man, with red hair (without the traditional "white horse"); his wife and his son were with him, and were very much affected during the trial. It appeared in evidence that a cigar dealer in Canal Street had been requested by "Mac" to receive letters directed to him under various names. The cigar dealer opened an envelope addressed to him, which contained one of these "green goods" circulars, and also the slip usually enclosed with the circular—apparently a clipping from a newspaper and describing the career of some criminal in Belgium who was charged with trying to sell twenty thousand dollars' worth of gold coin for eight hundred dollars, claiming that the coin was genuine. A practical printer testified that this clipping was bogus, and had never been printed in a newspaper. If our correspondents who have received these clippings had carefully examined them, they would see at once that they were not genuine, but were manufactured for the occasion. The cigarmaker testified that he made complaint to the police, and that on that complaint "Mac" was arrested. "Mac" tried to escape on the plea that the letters were not for himself, but for a friend. The jury having heard the whole story were sent out and agreed upon a verdict in fifteen minutes. This arrest and conviction will probably be the means of putting an end, or at least a limitation, to this method of entrapping the unwary. These "green goods" and "gold" circulars have been sent through the mails for years. They are distributed in such a way that it is exceedingly difficult to procure evidence sufficient to convict. The AMERICAN AGRICULTURIST has from time to time given the results of trials and examinations in the city of New York, and we need not tell our readers that we are of the opinion that the man who deals with these criminals, or who is moved to respond to their criminal advances, is quite as guilty as the sellers of these spurious goods. In our June number, page 263, several cases are cited, and the fact is noted that Congressman Amos J. Cummings, who is the editor of a newspaper, and a man of singular determination and of large knowledge, has introduced a bill in the House of Representatives to punish persons who deal with these "green goods," or who take any part in the distribution of the circulars issued by the swindlers who have this matter in charge.

C. E. S., West Point, O.; H. S., of Cross Plains, Wis., and sundry others are the recipients of the green goods circulars, and forward them to this office. We have a hope that an end will be put to the existence of this sort of business by the new law, and from the fact that one at least of the scoundrels has been sent to prison from New York, and another has been indicted in Brooklyn. The last has various names, as Reilly, Fuller, Hayes and Ready, and some of our readers may recall his post-office address. He has been an active distributor of these circulars.

Timely Topics.

Paris International Exhibition.—Paris is to have another "big show" next year, at which agriculture, and especially agricultural machinery, is to enjoy marked facilities. There is to be an immense "Agricultural Palace," and all the rest.

Vanilla in Madagascar.—The attempts to cultivate vanilla in Madagascar are said to be completely successful, and a crop of the finest quality was raised. There is a German settlement on the east coast of Africa, where their first crop (fifty-five pounds) awaits shipment to Germany by next steamer.

Good for a Heavy Pull.—The Novelty steel harness, made by the Sherwood Harness Company, of Syracuse, N. Y., has the great advantage, in addition to cheapness and durability, of being easier on the team, and enabling it to draw more than with ordinary harness. There being no tugs or whiffletrees, the team is hitched closer to the load, and can therefore pull to much greater advantage.

More European Exhibitions.—An International Horticultural Exhibition will be held at Cologne from August 4th to September 9th. Seven hundred and fifty medals will be awarded.....At Brussels will be another "International," open from May until October.. . In Vienna, the Fruit Society of Lower Austria, at which special attention will be given to fruit preservation by drying, canning, etc., meets this autumn; the precise date is not given.

New York Horticultural Society.—The annual exhibition of this society will be held on November 13th and following days. There is a good list of premiums offered for chrysanthemums, orchids, palms, roses, carnations, floral designs, etc. There are several special prizes of twenty-five dollars each, and many of fifteen dollars and ten dollars. As usual, there will be an attractive and popular exhibition. "Flower shows" are an important feature of London life, and are growing in favor both in town and country in the United States.

Why Grain is High.—The Hon. J. R. Dodge, Statistician U. S. Dep't. of Agriculture, being asked by the AMERICAN AGRICULTURIST as to the cause of the high price of grains of all kinds at the present time, replied that "the advance in the price of corn, which has been progressive since last fall, is due to a yield last year only three-fourths of an average. A decline of 25 per cent in production is a great stimulus to prices, compared with which the average foreign demand of 4 per cent is scarcely appreciable as a cause of higher prices. The home consumption, and not the Liverpool demand, makes the price of corn in this country. The recent increase in the price of wheat, which is still too low for the best interests of the grower, is caused by the low condition of the present wheat crop."

The Ghent Exhibition.—In the third week of April last there was held an important exhibition, which the English horticulturists were preparing to attend in full force. Nearly every one who has read much about horticulture, is aware that Ghent (or Gand) is a great horticultural center; but its extended and varied manufactures make it one of the most important and prosperous cities of Continental Europe. With a population of 190,000, it has 273 nurseries and over 2,000 plant houses. The exhibits were announced to be arranged in 417 classes, and nearly 200 judges were invited to serve. The city officials were to give receptions and banquets. One day was to be devoted to an "international meeting," to be presided over by Count Merchore de Denterghem, and "matters of great importance to commercial floriculture were to be discussed."

The Buffalo Fair.—The Buffalo International Fair will be held in September, from the 4th to the 14th. It so happens that this fair occurs on the thousandth anniversary of the first fair inaugurated by Alfred the Great, in England. That fair was probably held in the fall, as this one will be, that being the favorite period of the year for such exhibitions in Great Britain. Buffalo is admirably situated for a great fair, as its communications by land and water are numerous. More than four hundred and fifty passenger trains arrive and depart daily. The population is about two hundred and fifty thousand, and the city is large, imposing and prosperous. The list of prizes to be given at the fair is very large, and the cash value is more than a hundred thousand dollars. There are ninety acres in the enclosure where the exhibition will be held, and the grounds are accessible by steam cars and by surface roads. The building to be erected for the International Fair will be the largest of its kind ever constructed in the United States.

Gleanings from Home and Abroad.

A cannery for guavas and figs with a plant of $10,000 is to be established in Florida.

Thirty-eight farmers in Victoria own 1,428,000 acres of land, an average of more than 37,000 acres.

The Queen of England is president of the Royal Agricultural Society for its forthcoming jubilee year.

Experiments made in Jamaica and in Natal are favorable to the growth of tea and of cinchona. The English Colonies are unwearied in their efforts to acclimatize the plants of other lands.

A Louisiana farmer sold $75 worth of potatoes, the product of one acre, and then planted the acre to cotton and sold the product for $50. The $125 he naturally regards as a good result from a single acre.

Many creameries will be established in the Columbia River basin in Oregon during the present spring and summer. The people of Oregon are enthusiastic in these projects, and they propose to show that first-class dairying is possible in that State.

Matches made in Japan—there are thirteen factories in Tokio—are supplanting English and Swedish matches in China, Siam and the Straits Islands. They are sold for fifteen dollars the one thousand dozen boxes. The consumption is large in Japan.

The *Murray River Agricultural Times* (Australia) for March 7th last, among its hints on garden work, directs that dahlias and gladiolus should be taken up as soon as they have finished flowering, and stored in a warm cellar. The year's circuit there is somewhat different from ours.

The *Nebraska Farmer*, noting the continuous rains and cold weather through April and May, observes that farm work has been retarded and grain planting delayed, but it is satisfactory to know that the weather was unfavorable for the young chinch bugs that were hatching during that period.

Miss Osmerod has delivered another diatribe against the English sparrow. She is an eminent entomologist and knows what she is talking about. The speakers at the Farmers' Club in London, which Miss Osmerod addressed, agreed with her that the sparrow was "more destructive than useful."

The steamships plying between New York and England are carrying enormous quantities of bituminous coal as ballast, in absence of the customary grain cargoes. The amount of coal so carried within the last year is 1,000,000 tons. The foreign steamers are also increasing consumers of American coal.

A patriotic Englishman has commemorated the jubilee of the Queen by planting on the slopes of a mountain in Wales six hundred and thirty thousand trees. They have been arranged in letters making the word "Jubilee, 1887," and each letter measures two hundred yards in length, and is twenty-five feet wide.

The House of Representatives has passed a bill to make the Department of Agriculture an Executive Department, and the Senate Committee have reported favorably the same bill, striking out, however, the provision for the transfer of the Signal Service Bureau from the War Department to the new Department of Agriculture.

A correspondent of the *Florida Dispatch*, writing from Volusia County, says that in February and March he picked seven varieties of ripe fruit, five in April, and in May seven. He picks ripe fruit every day in the year. The fault with settlers is that they plant oranges and "more oranges," and have no place for the mulberry, peach, pear, plum, persimmon, loquat, fig, guava, pomegranate, kumquat, lime, lemon, grapevine, strawberry bed, etc.

Benjamin Franklin in 1787 wrote from Paris to a friend in Philadelphia, and, referring to a recent tempest in France, said, "I have sometimes thought it might be well to establish an office of insurance for farms against the damage that may occur from storms, blight, insects, etc.; a small sum paid by a number would repair such losses and prevent much poverty and distress." A shrewd idea of the old philosopher, and not too late for consideration one hundred and one years after its utterance.

The *Toronto Farmer* says that the cereal crop of Manitoba for last year was of wheat 12,860,000 bushels, of which 10,613,000 bushels were for export. The crop of barley and oats and flax was also of considerable dimensions, so that altogether the export of that region was 15,000,000 bushels. This crop was produced by not more than sixteen thousand farmers and farm-workers. These figures emphasize the fact that Manitoba is a prairie land with productive soil, and where machinery can be used.

The *Scientific American* says the farmers of the United States consume thirty-five thousand tons of twine annually in their harvesting operations. This twine is usually made of sisal or manilla hemp, and the consumption of twine per acre is put at two pounds, or about twelve hundred feet, at a cost of about twenty-five cents. The manilla hemp twine is a little more expensive than sisal, but it is said to go further, and to be actually cheaper to use, because it is stronger and more durable, and does not have the breakages which occasion a loss of time in their repair.

The Dakota Agricultural College has a farm of 400 acres, a chemical laboratory with necessary equipments of farming utensils, and of shops for wood and metal work. They have purchased fine specimens of the leading breeds of animals, and are experimenting with grains, grasses, fruits, etc. The college is attended by both young men and young women, and to the latter is given instruction in household duties. The young men are enabled to partially pay their expenses by working on the farm. The college has an investment of about one hundred thousand dollars.

The *Planter's Gazette* of India recommends the establishment of American steamboat lines on the rivers of Hindostan. It thinks that steamers such as ply on the Mississippi and the Hudson and others of our rivers would prove to be very productive property in India. One line of steamers on the Irrawaddy in Burmah make for their owners from ten to fifteen thousand dollars for a little less than a month's service, and this at a time when the owners complained of "dull trade." The line in question is actually unable to provide sufficient transportation for the cargoes that offer, and the trade is constantly growing.

One feature of the tea trade in England is the steady displacement of China tea by the product of India and Ceylon. Out of a consumption in Great Britain last year of 15,000,000 pounds, the quantities from China and from India were about equal. Thirteen years ago the percentage of China tea imported was 87 and that of India was 13. For the season ending May 31st, 1888, the import of tea to Great Britain from China was 121,000,000 pounds; from India 87,000,000; from Ceylon 14,000,000; of this whole amount 35,000,000 pounds were exported, leaving the consumption about five pounds to the head of population.

Slavery has been abolished in Brazil. About twenty years ago the Emperor freed the slaves belonging to the government. Then came the law of 1871, which freed slave children born after that date, and which began a system of compensated emancipation. In 1885 another measure was passed to free slaves of more than sixty years of age, and providing for an increase of the emancipation fund and bounties for imported labor. Under this law it was supposed that slavery would end within ten or twelve years, but now a law of absolute prohibition has been passed, with probably some provisions for exacting remunerated labor from the freedmen for a certain definite period.

The good people who frequent Chautauqua Lake and its surroundings will find the fishing much improved by the introduction of thousands of muskallonge. More than forty thousand young fish of this species have been placed in the lake which has always been noted for the quality, if not the quantity, of its muskallonge. It will not be this season or the next that these fish will be good game for sportsmen, but by the third year they will take to the "spoon" naturally and with ferocity. Salmon trout have been placed in Chautauqua Lake, and it is supposed that they fell victims to the voracity of the more "gamy" occupants of those waters.

The wheat crop of India for last year, as estimated by the Agricultural Department of Great Britain, was raised upon 26,000,000 acres. The export has declined during the past year, and the total was about 36,000,000 bushels, of which 16,000,000 were exported to Great Britain. The short crop of other grains and seeds used for food in India is one cause of the decline in exportation. The English authorities on the subject state that whenever there is a material supply of food grains and seeds in the country, the Indian export merchants can send wheat from India at a price which will enable them to compete at the lowest prices which have yet ruled in Europe, but that when the surplus is small, they are unable to answer the demand, even when supported by a rising price in the English market.

A recent book issued in London, devoted to the poultry business, has a chapter on "Practical Politics as applied to Poultry Farms." The value of the eggs imported into England annually is about fifteen million dollars. The writer thinks that this money should be kept at home to pay for labor. It requires more than seven million hens to produce the quantity of eggs imported into England, and under the plan proposed these hens would be reared and fed in that country. The writer suggests that land owners extend privileges of real estate to their laborers, so as to encourage them in rearing chickens, and he mentions the singular fact that there are "several poultry farms on a large scale in England, from every one of which between 40,000 and 50,000 chickens have been sent to market in one year; a fact that goes to show that poultry can be kept in large numbers."

The horses of Kentucky are about 400,000 in number, and worth about $25,000,000, as they are rated in the census of 1880 and by the returns of the Agricultural Department for 1887. These are the horses, however, that are on farms, and there are a very large number "not on farms," and these average a very high valuation. In the spring months there are large sales of horses in Kentucky of the thoroughbred stock, to which sales buyers are attracted from all parts of the Union. The pedigree of the colts and the fillies sold at these spring sales is carefully inquired into, and a good round price goes with a good reputation. At three recent sales 133 animals were sold, aggregating $124,000, or an average of nearly $950. The colts of the Billet and Hindoo strain averaged $2,177 each, and several of them were sold. The Louisville *Home and Farm* very aptly says: "More than the race course, more than the exposition or annual fairs, these sales are attractive and representative, and because they are so, worthy of some American Rose Bonheur, or the man who aims faithfully to picture life in this country."

GREAT YIELD OF MILK AND BUTTER.—Messrs. Smiths, Powell & Lamb, of Syracuse, furnish some remarkable records of milk and butter in their Holstein-Friesian herd. Aaggie Constance yielded in one week 19 pounds 14¼ ounces of butter. As a two-year-old she gave 76 pounds 6 ounces milk in a day (the largest record ever made by one of her age), and 16,761 pounds 11 ounces in a year. Lakeside Prize, 18 pounds 6¼ ounces as a four-year-old; Clothilde 3d's Countess, 13 pounds 15¼ ounces as a two-year-old; Netherland Duke's Nierop, 12 pounds 2¼ ounces as a two-year-old; Excelsior Princess 2d, 10¼ pounds as a two-year-old; Idene Rooker 2d, 10¼ pounds as a two-year-old. Dairy milk records as follows have recently been made in this herd: Lady Griswold, 82 pounds 13 ounces; Executrix, 81 pounds 1 ounce; Lakeside Prize as four-year-old, 74 pounds 11 ounces; Artis Surprise as four-year-old, 70 pounds; Clothilde 3d's Countess as two-year-old, 51 pounds.

Kind Words.

The *Home Monthly*, one of the many excellent journals in Pennsylvania, says: "The AMERICAN AGRICULTURIST grows better with age, and is the old 'stand-by' in agricultural matters; full of sound sense, good advice, and suggestions, ably written. The 'humbug' column deserves special note. It spares no sort of frauds or evil-doers that impose upon the farming community. It is a wise step to subscribe for it."

A subscriber in Beaufort Co., N. C., writes us: "I am well pleased with the AMERICAN AGRICULTURIST. I have been taking it for three years, and do not see how I could do without it. I am surprised that every farmer does not take it."

Mr. John W. Noble, San Bernardino, Cal., writes us under date of May 25th: "I consider the AMERICAN AGRICULTURIST the finest paper I ever looked over, and as I am a printer myself, and have been for a good many years, I am a judge of neat work."

Business Department.

Hay Presses.—The Whitman Agricultural Co., St. Louis, Mo., are doing a very extensive business in Hay Presses, notwithstanding the "depressed" times. A letter bearing date May 30th states that the sales of Presses are larger than ever before, reaching in three days fifty-eight machines. The Company have been obliged to introduce new machinery and to increase their facilities in order to supply the demand. Their new Steam Press has proved a wonderful success, and their trade is rapidly extending into all countries.

An Oasis Worked by a Wind Mill.—The Perkins Wind Mill and Ax Co., of Mishawaka, Ind., have sent us an admirable lithographic poster in a handsome frame, representing a party of Arabs at an oasis in the desert. A Perkins Wind Mill pumping water from a well in the oasis forms the center of the picture, indicating that the march of modern progress has extended even to that far-off region.

London Purple in the Orchard.—J. W. Barnes, Wayne Co., N. Y., asks if London purple or Paris green can be used to destroy codling moth without danger. With proper precautions there need be no danger at all. The operator should always keep on the windward side of the work, so that the poisonous spray will not be blown upon him. Care must also be used not to let the poison come in contact with any sores or abrasions on the hands. Spraying the orchard with arsenical poison early in the season does not involve any risk from eating the apples after they have attained maturity. Every trace of the poison is removed by winds and rains long before that.

Butter and Cheese in Canada.—The export of butter from Canada has declined from eighteen and a half million pounds in 1880, to five and a half million pounds in 1887. At the same time the export of cheese has increased from forty million pounds to about seventy-nine million. Possibly these two results are related, but it is admitted by all who know anything upon the subject, that the quality of Canada butter is not high. It is not wanted in the British market. On the contrary the Canadian cheese is quoted at the highest figures, and is in great demand. The *Toronto World* says that most of the butter sold in Canada is at thirteen or fourteen cents per pound, that the trade is carried on by the country store-keepers, who take whatever is offered them and pay for it in goods at enormous prices. The butter is brought in small lots made by a variety of methods and deposited in poorly ventilated cellars, and when enough is collected to pack and send to market, it is rolled together in an indiscriminate and heterogeneous mass. Creameries have been established already in the Province of Ontario to the number of fifty-five, and in the Province of Quebec to the number of two hundred, while the cheese factories are more numerous in the Province of Ontario. The Canadian journals that have discussed this question think that a creamery should be established in every township in the Province, and that instruction should be imparted to the farmers in regard to the best methods of making butter. Denmark, which is celebrated for the quality of its butter, sends twelve million dollars' worth to England every year, while Canada sends only a million dollars' worth. A small book on dairying has been published by the Dominion Government and freely distributed among the farmers. The probability is that if they should make a study of such a work as "Stewart's Dairyman's Manual," which is published by the AMERICAN AGRICULTURIST, the result in profit would be large and speedy. The uniform testimony of the press is that this "Manual" covers the entire field of dairy knowledge and practice.

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170 acres, located 7 miles south of Berkeley Springs, the celebrated warm spring watering place. Farm in good state of cultivation; good fences; good house, 6 rooms; kitchen cellar; good water. Barn, ice-house, granary, corn crib, wagon-shed, work-shop, implement house. Fine orchard, choice fruit. First-class location. Price, $25.00 per acre. Apply to WILLIAM EPPINGER, Berkeley Springs, Morgan County, West Virginia.

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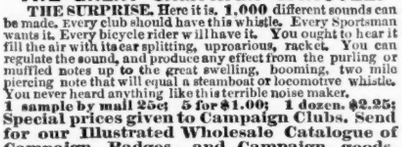

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It is **made similar to and looks like watches that cost $100** and upwards, and will keep as accurate time as high-priced watches. The works will fit any American case.

These watches are furnished in our "Diamond Silver" Case, the best combination of Silver and Nickel ever used. They are solid, not plated, and will wear the same until worn through to the movement. They are made snap back and front; it will keep out the dust and dirt and is more dust proof than it would be if they were hinged, thus avoiding the expense and bother of cleaning so often.

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All the movements are carefully regulated and inspected before leaving the factory. The manufacturers **guarantee each watch for one year.** Should there be any trouble with any watch it will be repaired free of charge, within the above time.

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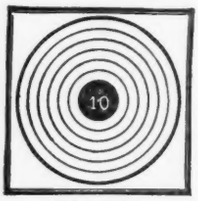
The air chamber and barrel are of mandrel drawn brass, accurately bored and polished. The barrel has a perfect device for holding the ball tight to place. The plunger or piston is of brass, turned to fit the air chamber perfectly. The spiral spring that drives the plunger is of the very best of steel, and made especially for this purpose. All parts are made to stand continual usage and not get out of order. The gun is nicely sighted, and well worth twice the retail price.

This is not a Spring Gun. The Ball is Thrown by Compressed Air.



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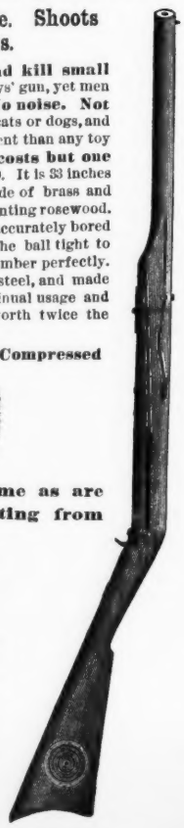

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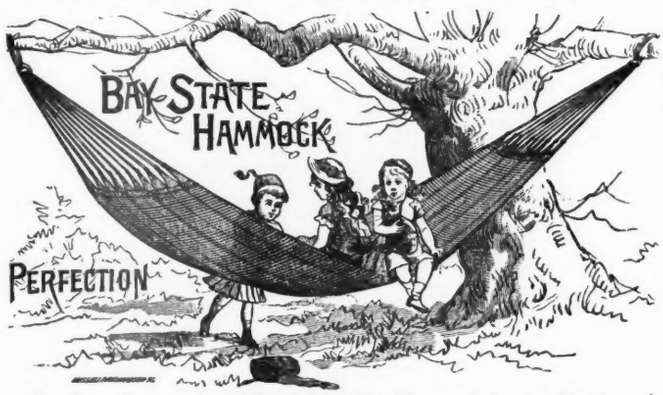

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We will send one post-paid for **$1.20,** or we will present one for a club of **6** six-months' subscribers at **50 cents** each, or for **3** subscribers and 50 cents in cash.

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Given for a club of 8 six-months' subscribers at 50 cts. each, or for 4 subscribers and 50 cts. in cash. Express prepaid.

This rocker is a special bargain, and we particularly recommend it to our readers as a most durable and ornamental piece of furniture. It is full size sewing chair. It can be folded up like the camp chair and easily transported from place to place. It is made of polished maple, and upholstered with bright-colored Brussels, decorated with fringe. It will look well in any room, and makes a handsome piazza chair for the summer months. It is very comfortable. Buy this chair and you will have a treasure of which you may well be proud.

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LADIES' LINED WORK BASKET.

Given for 2 six-months' subscribers.

This is an article that should grace the table of every mother and daughter in the land. It is made of strong wicker work, very pretty in design and lined with Sateen. It contains two pockets and a pin cushion, and measures 8 inches in diameter. It is a handy receptacle for sewing materials and will be an ornament wherever it is placed.

Price **50 cents,** post-paid.

FRENCH ACHROMATIC TELESCOPE.

Given for a club of 14 six-months' subscribers at 50 cts. each, or for 7 subscribers and $1 in cash.

This useful and beautiful instrument has five lenses, of the best French manufacture. The object lenses are achromatic, that is, convex and concave, having different retractive and dispersive powers, with the curvatures so adjusted that the chromatic aberration produced by the one is corrected by the other, and light emerges from the compound lens undecomposed, or free from color, objects at a long distance appearing clear and natural. High power achromatic telescopes have heretofore sold at prices placing them almost beyond the reach of persons of moderate means. The telescope we now offer is just what the people want, a real philosophical instrument at a low price. Farmers, herdsmen, hunters, prospectors, sailors, travelers, tourists, and, in fact, everybody, will find this instrument invaluable. Farmers and herdsmen can see their cattle or sheep miles away. Hunters can distinguish game at great distances, and by this means not give warning of their approach. The tourist can bring distant mountains, valleys and cities almost to his feet, while anyone with this telescope will soon become familiar with different objects that before (from their great distance) he knew nothing of. Friends and acquaintances can be recognized at great distances, and the instrument will prove both instructive and amusing to every one. It is strongly made and cannot get out of order, but will last for a lifetime. The slides and mountings are made of brass, highly polished, the telescoping tubes fitting closely into each other. Safety caps of polished brass cover the exposed ends of the instrument, keeping out dampness and dust when not in use. The main tube or body of the telescope is covered with handsome French morocco, making it altogether a most excellent instrument. The length of the telescope when extended is 16½ inches; when closed, 6 inches; diameter, 1¼ inches. How far can I see with this telescope? If the atmosphere is clear you can see the time on a tower clock at a distance of five miles. A man who is one mile away will appear to be fifteen rods from you, and persons with whom you are familiar can be recognized at a distance of three or four miles. What are supposed to be mountains or extinct craters on the surface of the moon can be seen plainly with the glass. There is not a man, woman or child that cannot find uses for such a glass almost every day of their life. Many of our customers write us that they have never had so much pleasure and enjoyment from a small investment as this telescope has afforded them. With proper care it will last a lifetime. Each telescope is furnished with a strong case.

Price, all complete, only **$3,** packed carefully, and sent by mail, post-paid.

DECORATED CHINA TEA SET OF 44 PIECES.

Given for a club of 32 six-months' subscribers at 50 cts. each, or for 16 six-months' subscribers and $2.50 in cash.

There is certainly nothing more durable or useful than a nice set of beautifully decorated China. We take pleasure in offering our readers a Set of China that cannot fail to delight every lady in the land, for a better or prettier Set cannot be found. It is made of the finest and most durable ware, and no one except a crockery dealer would be able to distinguish it from the best French China, which costs double what we ask for this. It consists of **12 Tea Plates, 12 Tea Cups, 12 Saucers, 1 Covered Tea Pot, 1 Sugar Bowl, 1 Creamer, 1 Milk Bowl and 2 Cake Plates—44 pieces in all.** It is the latest pattern, and each piece has a gold edge and is beautifully decorated with a design of **moss rose buds.** An idea of the beautiful decorations can be had by a glance at the illustration herewith, but does not of course do it justice, because the colors cannot be shown. When you see the Set itself in all the lovely colors of the **moss rose,** you will surely exclaim, "The most beautiful set I have ever seen!"

A few hours' work will enable you to secure this valuable Set. Shipped from Trenton, N. J., by freight, charges prepaid to your nearest freight depot. Sold for only **$8,** receiver to pay freight charges.

POCKET DRINKING CUP.

Given for 1 six-months' subscriber.

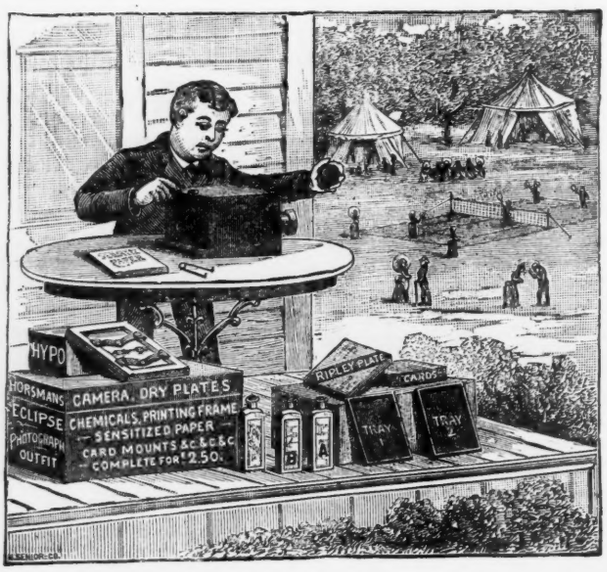
This collapsing cup, as it is called, is a very convenient article to own and a decided novelty. It occupies no more space than a medium sized watch, so that it can be carried constantly without inconvenience. In their journeyings people often come across sweet springs of water which they long to taste, but generally are not able, as no cup is to be had. This cup is always handy. Its use on the cars, at picnics and the like is invaluable. It is made of nickel and inclosed in a handsome watch case, which can be attached to the chain if desired, and no one could tell the difference between it and a real watch until opened.

Price **25 cents,** post-paid.

HORSEMAN'S COMPLETE ECLIPSE PHOTOGRAPHIC OUTFIT.

Warranted to do Good Work, and to be Just as Represented.

Given for a club of 14 subscribers at 50 cts. each, or for 7 subscribers and 75 cts. in cash. Sent prepaid by express.



This is the neatest and most complete outfit ever offered at so low a price, and is so simple that a child 10 years old can make a picture. The outfit contains all that is needed to make and complete a photograph.

It consists of a beautiful little camera, covered in imitation morocco, that will make a photograph 3½ x 4½ inches in size, and is provided with a rapid wide-angle Lens. It also includes 6 Lightning Dry Plates, 2 Japanned Iron Trays, 2 bottles Developer, 1 package Hyposulphite Soda, 1 Printing Frame, 6 sheets each Silvered and Blue Print Paper, 1 bottle of Gold or Toning Solution, 12 Card Mounts, 1 Plate Lifter, 1 sheet Ruby Paper, and full directions for making Ruby Lamp. The directions are plain and full, showing how to prepare the plates, taking, developing, fixing and printing the picture.

Price **$2.50.** By express at expense of receiver.

LADIES' HAND BAG.

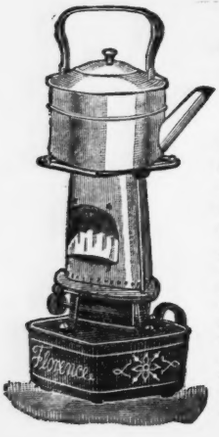
Given for a club of 4 six-months' subscribers at 50 cts. each.

This is a solid leather bag of imitation seal which is soft and fine and very durable. The style of the bag is shown in the cut. It is 8 inches long and about 5 inches high, has a heavy nickel frame, with box bottom and ball clasps, solid leather handle, is lined with sateen and has both an inside and outside pocket. The outside pocket is provided with an ornamental flap of extra fine leather, which adds much to its appearance. The bag is well made throughout, and for style is a general favorite.

Price **75 cents**, postpaid.

"FLORENCE" LAMP STOVE.

Given for a club of 6 six-months' subscribers at 50 cts. each, or for 3 subscribers and 50 cts. in cash.

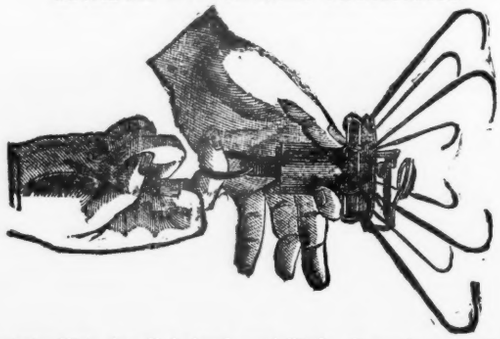


This device furnishes in one combination a powerful illuminating lamp and a strong, durable stove. Illuminates a room like a head-light reflector, and can be carried around the house like a common hand lamp. By its light one can read fine print at a distance of ten feet from the stove, as the light is all thrown in one direction, like a head-light reflector. It is more convenient to carry to a sick room than a larger stove, and if quick heat is wanted in the night, it lights the room while medical preparations are warming on the top. Will boil a quart of water in 8 minutes and heat a flatiron in 5 minutes. It can be made to do nearly all the small cooking in summer. No glass to break, and nothing to get out of order. It has a perforated gauze well under the filling hole, to prevent slopping of oil when moved. The reservoir is of cast iron, enameled inside and out. No danger of breaking or leaking.

Price, post-paid, $1.50.

THE EAGLE'S CLAW.

Given for 2 six-months' subscribers.



For catching **Fish, Small Animals and Birds.** It may be used with a line the same as a fish-hook, or be fastened and left in the water, or under leaves, or in a tree; game once in its clutches cannot get away. It catches always by the head, which preserves skins and furs of animals from injury. Its victims may be released without handling, which fact makes it popular with ladies for fishing, as they do not have to touch the fish; nor is the bait often disturbed, for the "**claw**" springs before the bait is taken; it is therefore seldom that hands are even soiled. The bait is put in while the "claw" is closed, so there is no danger in setting it. It is made of brass and blued the color of fish-hooks, will not rust and is thoroughly well made, at the same time being light and portable; they may even be carried in the pocket.

Price **25 cents,** post-paid.

QUADRUPLE PLATE NAPKIN RINGS.

Either given for 1 six-months' subscriber.

No. 360.

No. 420.

These napkin rings are made of white metal with quadruple plate of silver. There are no better rings made, and we firmly believe you cannot find any more desirable patterns than the two styles shown herewith. They have had a great sale the past season.

We can offer one of these rings for only **30 cents,** post-paid, or **50 cents** for two. Mention number desired when ordering.

WASTE SEWING SILK.

Given for 1 six-months' subscriber.

This silk comes in packages of one oz. each, consisting of about 1,000 yards of remnants of various lengths, so put up that every yard can be used without waste. It is suitable for sewing, embroidery, crazy patchwork, mending and other purposes. There are two sorts of packages; one contains all black silk and the other assorted colors and shades. It is furnished by one of the leading silk houses in the country, and if purchased regular would cost at least $1, but we can offer it for only **25 cents** per package, post-paid.

THE ACADIAN ALBUM.

Given for 2 six-months' subscribers.

As shown in the illustration the cover is embossed in a rich design of roses in colors true to nature, and the album contains seven full-page illustrations from Longfellow's poem "Evangeline," from paintings by a special artist sent to Acadia, Nova Scotia, in which the scenes of the poem were located, accompanied by quotations from "Evangeline."

It contains places for 92 autographs, and has rounded corners and gilt-edged leaves, making one of the prettiest books we have seen.

Sold for **50 cents,** post-paid.